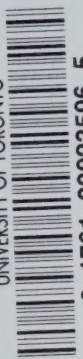


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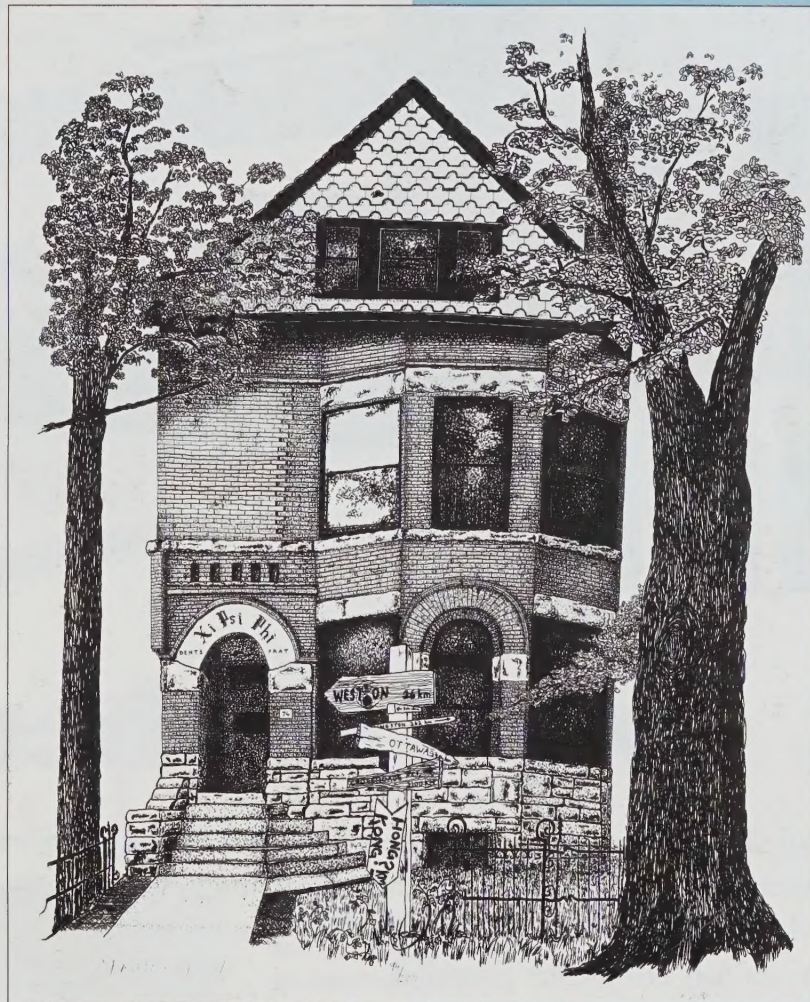


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Journal

Vol. 65, No. 1 • January • 1999



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Bilateral Dentigerous Cysts
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Journal

Canadian Dental Association

JANUARY 1999
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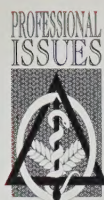
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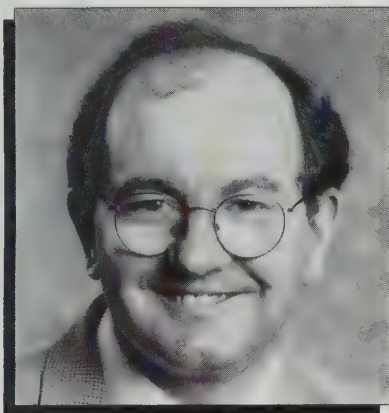
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THE IMPORTANCE OF PEER REVIEW



Dr. John P. O'Keefe

Last year I gave an interview to a reporter from one of those big glossy dental publications from south of the border that lands on your desk every month. The reporter was doing a feature piece on the future of dentistry and chose me for my deep and meaningful insights on this weighty topic.

During the interview, in response to a particular question, I said how proud I was that the *Journal of the Canadian Dental Association* is a peer-reviewed publication. The interviewer told me that peer review was a very touchy subject with the editor of that publication and that my mention of the *Journal* being peer reviewed would be edited out of the article. Sure enough, while many of my answers appeared verbatim in the subsequent article, my mention of our *Journal* being peer reviewed did not.

I found this attitude to peer review very interesting; when you haven't got it, you don't want to admit that others do. Perhaps many of you wonder why I keep mentioning the importance of peer review to the development of the *Journal*.

Peer review is, in my opinion, the cornerstone of a quality dental publication. The label "this article has been peer reviewed," which appears just below the abstract of many articles in the *Journal*, is a quality control stamp. This label indicates that an article has been checked by qualified experts for validity, originality and comprehensiveness. Let me outline to you what I think is the ideal process of peer review for the *Journal* — a process we have been introducing over the past few months.

1. Article is submitted to CDA head office, addressed to the editor. Articles can also be submitted by e-mail.

2. The editor reviews manuscript and decides to accept for review, send back for modification before resubmission, or reject outright.

3. The editor picks two reviewers who are experts in the particular clinical or academic discipline.

4. The editor contacts potential reviewers by telephone, fax or e-mail to check availability and willingness to review.

5. The editor sends manuscript (with identity of authors removed) to reviewers, with request that reviewers' comments be back to editor in three weeks. The manuscript is accompanied by a covering letter that explains the review criteria and a checklist of aspects of manuscript to examine. If reviewers use Acrobat Reader, the manuscript can be sent as an Adobe Acrobat e-mail attachment. If not, and the reviewer is not comfortable with this technology, the manuscript can be sent by courier.

6. Some manuscripts may be sent to an expert statistician for review.

7. The expert reviewers' comments come back to the editor.

8. The editor decides whether to accept (as is or with modifications) or reject, based on the reviewers' comments and the quality, importance and relevance of the article.

9. The editor has the final decision on the acceptance of the manuscript. This can be a challenge when one reviewer recommends acceptance, while the other recommends rejection.

10. The editor communicates the acceptance decision to the authors and advises of next steps.

11. The authors resubmit the modified manuscript to the editor. In the majority of cases, the article is now ready to be scheduled for publication. In some cases, the manuscript may need to be looked at again by a technical expert.

12. Article is sent for copy-editing.

13. Article is published.

In my covering letter to reviewers, I give some guidelines about the remarks that they should direct to the authors. I ask that they:

- please start by making general comments about the validity, importance and completeness of the manuscript;
- suggest means by which the manuscript could be improved, in terms of its comprehensiveness;
- continue by commenting on specific areas of the text, such as introduction, methods, results, discussion, etc.;
- comment on the clarity and comprehensiveness of tables, figures and illustrations;
- comment on the comprehensiveness and validity of the references cited by the authors.

Our dedicated reviewers perform this task cheerfully and without monetary recompense. They do it out of a sense of duty and love for the body of knowledge of our profession. Without their input, the quality of the *Journal* would be diminished. I would like to take this opportunity to thank our reviewers for their wonderful contributions to the publication.

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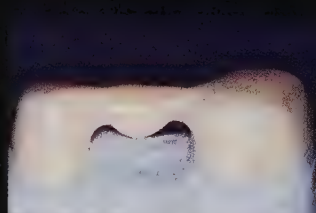
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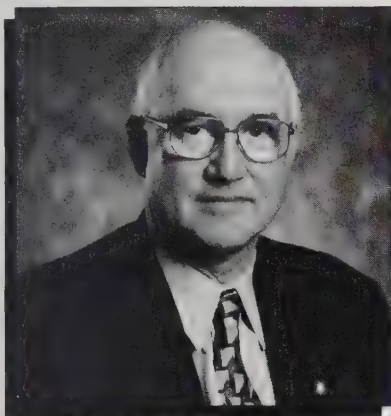


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Dr. Richard D. Sandilands

The ongoing debate regarding health care funding promises to be a major topic of interest over the next month or so as the federal government puts the final touches on its budget. Although health care funding is a provincial matter, federal transfer payments have a direct impact on all health care professions, including dentistry. One key player influencing funding decisions is the consumer, or the end user of the services. There is in Canada today an increased demand by the public for more accountability as a result of greater public awareness and consumer activism. This has been accompanied by a shift in power from the providers to the consumers of health care.

The traditional providers of health care, namely medical and dental professionals, are directly affected by this new reality. In medicine, a prime example of consumer-driven changes is the licensing of midwives and nurse-practitioners in some provinces. The decision to license these groups is in direct response to consumer demands for better and more affordable access to the current medical system. In dentistry, we have been witnessing a similar movement as dental hygiene has become self-regulating in five of the ten provinces, affecting 90%

of all licensed hygienists. Within the next few years, self-regulation will probably be a fait accompli across the country.

Certainly one can make the argument that these particular health care providers are not as well trained as medical and dental professionals, but the fact remains that provincial governments are in favour of these changes as long as proper training, licensing and regulatory controls are in place. However, in an environment of scarcity, changes of this nature create much consternation among professionals who view this fragmentation as an additional threat to their power.

In the coming years, the challenge for organized dentistry will be to ensure that the message concerning the importance of the dental team in the delivery of oral health care and the leadership role played by the dentist within that team is clearly conveyed to the public. Obviously, dental hygienists are trying to stake out the same position, as can be seen in the type of advertising they are promoting.

At this point, the issues surrounding self-regulation, scope of practice, and primacy of provider care in relation to hygienists are still unresolved. While dentists and hygienists are involved in heated arguments, the basic facts remain: governments welcome alternate provider groups within health care, and informed consumers continue to push the debate in the interest of economy and accessibility. The result will ultimately be the separation of the dental hygienist from the dental health team, which will affect the credibility of both dentists and hygienists. Ironically, the biggest loser will be the consumer—the one who precipitated the crisis in the first place.

The CDA has a well-defined position statement on the delivery of oral health care which states in no uncertain terms that the dentist is the only professional by educational preparation who is qualified

to provide a comprehensive differential diagnosis of oral health status. The association recently initiated a large-scale advertising campaign across the country that focused on the value of dentistry and the primacy of the dentist in the delivery of oral health care. The ads emphasize the partnership between patients and dentists. While dental hygienists may be well trained in some aspects of dental health, there must be no question as to who assumes the overall responsibility for the comprehensive oral health care of the patient. This is not a popularity contest, but a health issue that has serious implications for the patients we serve.

Provincial dental organizations must continue to work with their respective dental hygiene associations in a professional manner, with the understanding that while there are several important issues still requiring resolution, patient care cannot be used as a bargaining tool in the discussions. If left unresolved, the primacy of care issue will be settled by legislators, and if that happens, neither dentists nor dental hygienists will emerge victorious. Self-regulation and self-governance carry with them critical responsibilities; dentists and dental hygienists should jointly accept those responsibilities so that patients can be the beneficiaries of the best oral health care available.

Dentistry has been a leader in the health care movement from a treatment to a preventive model, which has benefitted patients. The challenge for dentistry is to continue to demonstrate this leadership within our changing practice environment. If we, as health care professionals, focus on what is in the best interest of our patients rather than on what is perceived as our own self-interest, we will find the right solutions to these complex issues.

*Richard D. Sandilands, DDS
President of the Canadian Dental Association*

Journal

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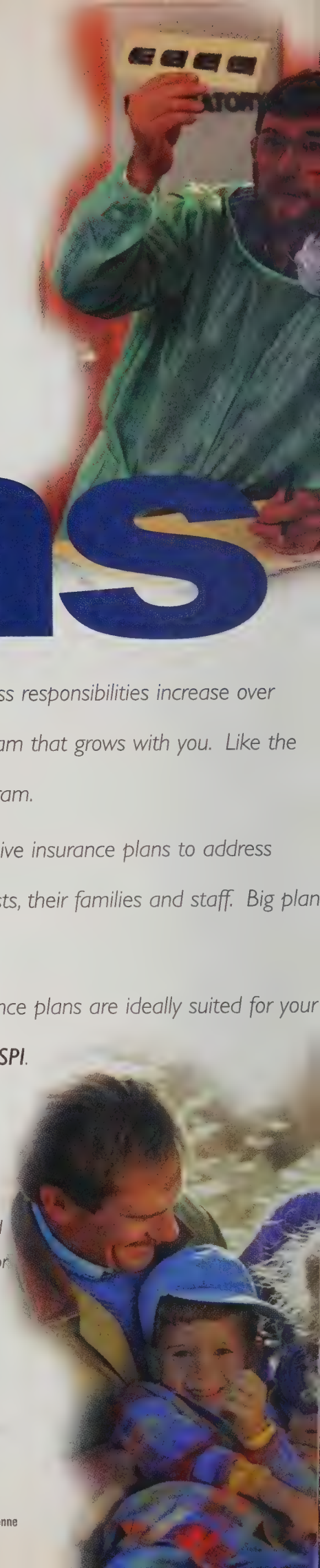
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LETTERS



Editor's Comment

The Journal welcomes letters from readers about topics that are relevant to the dental profession. The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association. Letters should ideally be no longer than 300 words. If what you want to say can't fit into 300 words, please consider writing a piece for our "Debate" section.

Geriatric Dental Care Crisis

I empathize with Dr. Brian Barrett's thesis on geriatric dental care ("The Looming Geriatric Dental Care Crisis" *J Can Dent Assoc* 1998; 64:623-4). I would add to that the even greater problem of the apathy which exists regarding the unmet basic dental needs of people of all ages living largely in our ghetto areas — Canada's third world.

It could be assumed that, with the "authoritative national voice" of dentistry in Canada listing "optimal oral health for Canadians" as the last of its priorities, these problems will continue well into the next millennium.

David Peters, DDS
St. John's, Nfld.

Latex Allergy

The problem of latex allergy is fast becoming one of the real concerns of any dental practice. Latex gloves can cause a contact dermatitis, which can affect not only the practitioner but susceptible patients as well. Furthermore, donning powder, which is often present in gloves, is released into the ambient air and can cause asthmatic reactions on its own or by virtue

of particles of latex embedded in the powder particles. The respiratory reaction can be quite debilitating, so much so that one may have to carry an EpiPen in the event of a severe reaction. Fortunately, the glove industry is responding to this problem by providing alternative non-latex and non-powdered gloves to the profession.

A search of the medical and dental literature reveals very little in the way of alternative treatments for latex allergy sufferers. By and large, barrier creams, cortisone, and cotton inserts worn under vinyl gloves seem to be the main treatment suggestions. Nevertheless, in spite of this practical regimen, some practitioners have not been able to continue practising as they either cannot put up with the treatment regimen or continue to suffer from allergy-related problems. Others, I am certain, have managed to continue practising in spite of these problems.

It would be most helpful if those practitioners who have been so affected would share their treatment regimens both successful and unsuccessful. Dentists are by nature most resourceful, and I am certain that those individuals, for whom the usual treatment has been unsuccessful, have experimented with alternative treatments that have allowed them to continue practising. If these individuals sent this information to the *Journal*, it could be shared with the profession and perhaps give assistance to those who need it.

Melvin D. Charendoff, DDS, MS,
FRCD(C), FICD
North York, Ont.

Life After Full-Time Practice

About 10 years ago, rumblings of discontent began to register on my consciousness. I began to question my vocational path and wonder what else was out there. What adventures were possible, what unknowns could I explore?

After several years of soul-searching and deprogramming,

my wife and I decided it was time for a change. A major one! Put the practice in Timmins, Ont., up for sale and move to Whistler, B.C., whether the practice had sold or not (our deadline: June 1995). Well it didn't, and after commuting for a year between Timmins (where I still had my practice) and Whistler (where my family had moved), I availed myself of a professional practice broker who sold my practice in 6 months.

I found the process very interesting and came to the conclusion that I could do this type of work in B.C. I subsequently joined the company and now represent them in that province. I am also having a ball doing it.

At one point I thought that was it for wet-fingered dentistry. I had devoted over 20 years to improving my knowledge of dentistry through extensive courses and wondered what I was doing, just at the height of my skills and contemplating giving it all up. Well, thank goodness for Gary Tipping, a dentist from everywhere, who convinced me otherwise. I now have the best of all worlds for me and my family. I still practise dentistry 3 to 4 months a year as a locum tenens. I enjoy practising across Canada, and have met incredible people and seen some great geography.

I continue to expand my horizons in dentistry and in the appraisal and brokerage business.

In conclusion I'd like to say there are always options. Don't let fear stand in the way of whatever your dreams are. Courage doesn't exist without fear.

John Wilson, B.Sc., DDS, FAGD
Whistler, BC

Fee Guides

I would like to ask Dr. Christensen if he would ever consider charging less than the suggested fee in the fee guide ("The Truth About Fee Guides" *J Can Dent*

Continued on page 30

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NEWS UPDATE

World AIDS Day

Federal health minister Allan Rock released Canada's first annual report on the progress of the Canadian Strategy on HIV/AIDS entitled *Canada's Report on HIV/AIDS 1998: Shared Vision-Shared Hope* on the occasion of World AIDS Day.

Marking the 11th annual World AIDS Day on December 1, the minister attended a breakfast meeting in Ottawa where he met with the federal government's partners in the Canadian Strategy on HIV/AIDS, representatives from youth and Aboriginal groups, members of the federal-provincial-territorial Committee on AIDS as well as a number of volunteers from the National Capital Region.

In releasing the report the minister said, "that progress has been made but much needs to be done as AIDS continues to exact an enormous toll on Canada's wealth and prosperity."

There are now more than 33 million people living with HIV/AIDS around the world. In 1998 alone, close to 6 million

new infections will occur, half of them in children between the ages of 15 and 24. ■

CDAnet Update

As we begin a new year, it is interesting to reflect on the successes of the past 12 months. In 1998, CDAnet hosted its first seminars for dentists and their staff to learn more about the program and to have their questions answered by a panel of experts from insurance companies, networks, and the CDA, all in one room. Thus far, seminars have been held in Toronto and Ottawa, and future sessions are being planned for Vancouver on February 18, 1999, and Halifax on August 6, 1999. These sessions will be held in conjunction with the Pacific Dental Conference and CDA Convention (hosted by the Nova Scotia Dental Association) respectively. The feedback received by CDA and the insurance companies at these sessions is extremely valuable in discovering areas for improvement in the CDAnet program.

The CDAnet program continues to grow in popularity. At press time,

we stood at a membership of over 4,400 offices and nearly 8,100 dentist accounts on CDAnet. This is an increase of more than 18% from the same time last year. We are also pleased to welcome The Empire Life Insurance Company of Canada and RBC Insurance (Royal Bank of Canada) as new participants to CDAnet.

Table I indicates the number of accounts added between November 30, 1997, and November 30, 1998, by province, and the percentage increase.

Despite our gains in membership, we still have to work on increasing the claim volume sent on CDAnet. Please make every effort to send your claims electronically, and inform us if you are experiencing problems, maybe we can help. You can reach us by phone at 1-800-267-9701 and via e-mail at tbennett@cda-adc.ca.

Many of our carriers, including Manulife Financial, would like to increase the number of claims handled in "real" time, that is, adjudicated within seconds. In order to achieve this objective, they will be rejecting claims with incorrect group policy and certificate numbers. Until this time, many of these claims have been accepted and put into "pending" mode for processing. This practice was not benefiting anyone, as it caused unnecessary delays in the processing of the claim.

Therefore, dental claims must be submitted with correct and complete dental plan/group and plan member/certificate information. Manulife Financial may use the "Disposition Field" to relay additional information to the dentist to explain why a claim has been rejected. The dental office should refer to this field to determine why the claim has been rejected and to help correct the claim information. ■

Table I
The Number of Accounts Added Between November 30, 1997, and November 30, 1998, by Province, and the Percentage Increase

Province/Territory	Dentist Accounts as of Nov 30/97	Dentist Accounts as of Nov 30/98	Increase in Number of CDAnet Accounts	Percentage Increase
Alberta	843	966	123	14.6
British Columbia	1,103	1,297	194	17.6
Manitoba	270	312	42	15.6
New Brunswick	53	59	6	11.3
Newfoundland	72	84	12	16.7
Nova Scotia	130	183	53	40.8
NWT	26	33	7	26.9
Ontario	3,846	4,512	666	17.3
PEI	10	11	1	10
Quebec	343	485	142	41.4
Saskatchewan	111	144	33	29.7
Yukon	0	1	1	100

Root Canals for Kodiaks

Two Kodiaks who have been featured in films and television are once again smiling for the cameras now that their dental problems are a thing of the past. The bears, along with a third fellow furry thespian, were brought to the teaching hospital of the Ontario Veterinary College in Guelph last November to receive medical attention for various ailments, including sore fangs, a skin condition and an eye problem. The medical team that tended to the bears included two dentists from Colorado who specialize in animal teeth and a local veterinary dentist. Special dental tools were brought from the U.S. for the procedure; after the animals were anesthetized using a blow-gun and darts, the two undergoing root canals were given isofluorane, the same gas humans receive for such surgery. The treatment went well, and the bears, who were in the Toronto area to work on the movie *Grizzly Falls*, were able to resume filming. ■

Omicron Joins Century Club

For 100 years, the Omicron chapter of the Xi Psi Phi dental fraternity has been in existence at the University of Toronto, supplying generation after generation of dental students with affordable accommodations in downtown Toronto. In the history of Xi Psi Phi, only three other chapters have survived continuously for over a century: Theta in Indianapolis (founded 1893), Iota in San Francisco (1894) and Gamma in Philadelphia (1895). Xi Psi Phi became an international dental fraternity with the establishment of Omicron at the Royal College of Dental Surgeons in Toronto, February 25, 1899. The chapter began with 20 members under the guidance of three graduates, Drs. C. Brown, G.W. Humpidge and F.B. Kenward.

Over the course of its first 100 years, the Omicron chapter has achieved many milestones:

- In 1908, the chapter boasted 30 members, 16 of which were liv-

ing in Alexandra Palace, Omicron's first home. Also that year, two members participated on the Canadian Olympic team: M.J. Elliot (gymnastics) and Calvin Bricker (long jump; bronze medal in 1908, silver medal in 1912).

- In 1917, member W.J. Laflamme led the Toronto Dental Hockey Club to the world amateur championship as the

team's president, coach and all-star right defenseman.

- In 1919, a charter was presented for the establishment of the Omicron Alumni Association to ensure the continued success of the fraternal organization. Many of the founding undergraduate members, including C.B. Bell, C.A. Kennedy and O.G. Plaxton,



"Fraternity"

Cover artist: Dr. Donald A. Ducasse

This month's cover was a labour of love for Dr. Ducasse, a practising dentist from Willowdale, Ontario. He lived at the Omicron chapter fraternity house of Xi Psi Phi from 1979 to 1983 while attending dental school at the University of Toronto. The pen and ink sketch was done to commemorate many happy memories of his student days. The sketch has been made into a lithograph series of prints, the proceeds of which go directly to the fraternity house fund.

Dr. Ducasse works in a variety of media, including oils, pastels, and pencil sketches. He has recently renewed his interest in soapstone carving. ■

CDA 1999 Nominations Sought

CDA is seeking nominations for its 1999 awards, including CDA Honorary Membership, Distinguished Service, and the Award of Merit. Nominations received by March 30 will be reviewed by the CDA Leadership Development and Awards Committee (LDAC), which will then make recommendations on suitable award winners to the association's Executive Council. The 1999 award recipients will be named during the annual meeting of the CDA Board of Governors in Ottawa.

No more than one individual should be proposed for Honorary Membership or the Distinguished Service Award, and submissions must include detailed curriculum vitae for each nominee. Although submissions should indicate the award an individual is being nominated for, the LDAC reserves the right to recommend which award, if any, will be granted to that person.

Honorary Membership

The association's highest honor is Honorary Membership, which recognizes individuals deemed to have made outstanding contributions to the art and science of dentistry, or to the dental profession, over a sustained period of time. Although this award may be for service that is provincial, national or international in nature, an outstanding contribution at the national level should be a principal consideration.

In general, only one or two honorary memberships are awarded annually and CDA may elect not to present this award in any given year. Winners receive a personalized framed certificate and a lapel pin. Honorary members who are licensed dentists are exempt from CDA membership dues, and all winners may attend association-sponsored scientific and social functions, as well as annual meetings and conventions at no registration cost.

Distinguished Service Award

CDA's Distinguished Service Award is presented to dentists or laymen to recognize either an outstanding contribution in a given year or outstanding service over a number of years. It may also recognize outstanding contributions to the dental profession at the academic, corporate, specialty society, council or committee level. Recipients receive an engraved plaque.

Award of Merit

The Award of Merit is presented annually to an individual who has served in an outstanding capacity in the governing of CDA or who has made similar contributions to Canadian dentistry. Candidates should have served at least two full terms as a governor of the association or two full terms on the Executive Council, or four years as a council, commission or committee chairman, or a number of years with a dental organization, institution or specialty section. Recipients receive an engraved plaque.

Certificate of Merit

The Certificate of Merit recognizes special service at any level of dentistry. In general, it is reserved for Canadian dentists and other individuals who have given at least one full term of service on a council, commission or committee of CDA, or long-standing service at the corporate or specialty section level. The LDAC will not receive nominations for this award. Recipients will be selected by the committee.

Nominations for Honorary Membership, Distinguished Service or the Award of Merit should be submitted by March 30, 1999, to:

**CDA Leadership Development and Awards Committee,
Canadian Dental Association,
1815 Alta Vista Drive, Ottawa, ON K1G 3Y6**

Nominations should be kept in confidence until the final decision regarding awards has been made.

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were also founders of the alumni association.

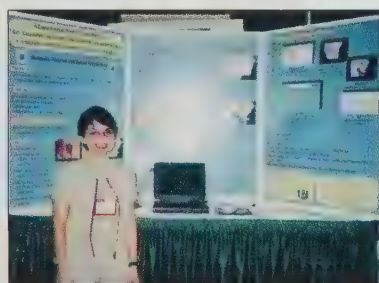
- On January 12, 1921, the alumni association bought a residence at 115 Madison Avenue as the new home of the undergraduate chapter. Famous names and leaders of the Madison Avenue era include George Morgan, Joe Slogan, K.S. Paynter and Wes Dunn. Omicron's Brother of the Year trophy, the Culbert and Shanks Award, commemorates the unselfish dedication of two members in particular from that time, Milton Culbert and Howard Shanks.
- In 1959, Omicron's chapter house moved to its present location at 74 Lowther Avenue. John Anthony and Bill Spence were instrumental in the purchase of the property, which seemed to invigorate the fraternity. Paul Morgan, Eric Luks and Graham Bowker are some of the more prominent members to have joined during the '60s.
- In the '70s, fraternity spirit peaked. Stephen Weingarten became the first Canadian member of Xi Psi Phi to join the board of the Supreme Chapter in 1974, the highest organizational level of the fraternity. Two years later, Omicron was named Xi Psi Phi Chapter of the Year under the leadership of Peter Kearney. At the close of the decade, the entire house at Lowther Avenue was gutted and rebuilt, with Eric Luks spearheading the drive to raise the \$250,000 necessary for the project. Other prominent names from that period include Claudio Tocchio, Jack Gerrow and Kris Row.
- In the '80s, new life was breathed into Omicron. Outstanding members included Robert Wood, James Bel, Peter Villa and Paul Monczka. Don Ducasse became the chapter house trustee. John Wiles revived the alumni association, and with Robert Givelas, established the yearly formal. In honour of the Centennial Cele-

bration of Xi Psi Phi in 1989, the Partridge-Luks Centennial Award was created to reward a third- or fourth-year student. Another change marking the decade was the admission of women at Omicron, the last chapter of Xi Psi Phi to be all-male. Sexual integration became a reality in 1986 when Judi Purvs joined the ranks.

- In 1992, Omicron received its second Chapter of the Year award, under the stewardship of president Marco Fazari. Don Ducasse became the second Canadian elected to the board of the Supreme Chapter when he was named Province Chair in 1996.

To celebrate a century of service to dentistry in Toronto, the Omicron chapter is hosting a gala event at Casa Loma on Saturday, February 13, 1999. For more information, or to obtain tickets, please contact Dr. Don Ducasse, tel.: (416) 226-4113. ■

Saskatchewan Student Deserves Recognition for Mandibular Nerve Anesthesia Project



Ms. Rosaleen Shavron with the poster presentation for the Mandibular Nerve Anesthesia CAL Module

In the July/August issue of the *Journal*, it was reported that University of Saskatchewan student Mr. James Stephenson earned first place in the 1998 CDA/Dentsply Student Clinician Program for the table clinic titled Computer-Assisted Learning (CAL) and Mandibular Nerve Anesthesia. Unfortunately, we failed to mention that Ms. Rosaleen Shavron had been instrumental in helping to develop the

project and that she was the student presenting it at the Table Clinic in San Francisco during the meeting of the American Dental Association last October.

The two university students have attracted international attention with their project, which has been featured in the October 1998 journal of the British Society for Computer Assisted Learning in Dentistry. Closer to home, Ms. Shavron and Mr. Stephenson have been busy integrating their project into the University of Saskatchewan Computer Assisted Learning Environment for Human Gross Anatomy (U-SCALE) Project. U-SCALE aims to help learners grasp basic anatomical concepts by using a combination of text, images, 3D models, animations, clinical examples and review questions. During the 1998-99 academic year, units on the thoracic region, head and neck will be available.

The two dental students had their storyboard project on how to freeze a patient's jaw, developed into a computer-animated program showing where to insert a needle, how much anesthetic to use and which nerves are affected. The information they gathered from dissecting cadavers whose jaws had been injected with zinc oxyde eugenol and India ink, and from taking photos and X-rays of a human head, were illustrated then scanned into the computer. The mandibular nerve anesthesia technique is part of the unit on the workings of the human jaw and the impact of diseases on this part of the anatomy.

The U-SCALE Project, which is lead by Dr. Geoff Guttman, assistant professor, department of anatomy and cell biology, will eventually contain units on every part of the human body. The computer program will be used as a learning tool for self-directed study, undergraduate courses and continuing education for health professionals. The animation is currently on the Internet, and if the project goes well, there are plans to put it on CD-ROM. For more

information on U-SCALE, visit its Web site at: <http://www.usask.ca/services/organization/department/anatomy/research/u-scale>. ■

APPOINTMENTS

The Canadian Association of Orthodontists Elects New President

Dr. Arlene Dagys is the new president of the Canadian Association of Orthodontists. Dr. Dagys received her dental degree in 1974 and her Diploma in Orthodontics in 1977 from the University of Toronto. She has a private practice in Toronto, is a staff orthodontist at the Craniofacial Centre at the Hospital for Sick Children, and is an associate in dentistry at the University of Toronto.



Dr. Arlene Dagys

She is past-president of several organizations including the Association of Women Dentists of Ontario, the Toronto East Dental Society and the Ontario Association of Orthodontists. She has served as governor of the Ontario Dental Association and has been elected to the International College of Dentists and Pierre Fauchard Academy.

The other officers elected for 1998-99 are: Drs. Ron Wolk, Calgary, Alb. (president-elect); Richard Marcus, Toronto, Ont. (1st vice-president); Ken Glover, Edmonton, Alb. (2nd vice-president); and Amanda Maplethorp, Maple Ridge, B.C. (secretary/treasurer). ■

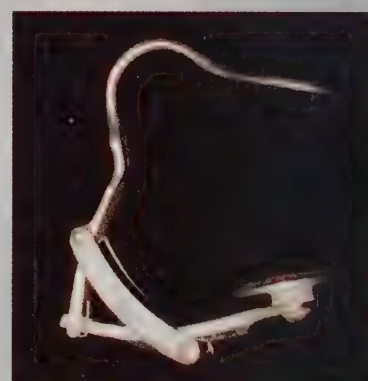
WHAT'S IT?



The Dentistry Canada Museum has received an identification for the "What's It" item that appeared in the July/August 1998 issue of the *Journal*, in which readers were asked to identify a pair of metal frames that appeared to have something to do with recording jaw relations. It seems everyone except the museum curator knew that the two frames were from a Hight Tracer, introduced in 1936 by Dr. F.M. Hight (Texas, USA) to establish centric relation in complete denture treatment.

Special thanks to Drs. Robert Loney, Ted Allison, Neil Basaraba, Ben Saik, Stephen Bray, Bill Harley and Aaron Fenton who wrote in and put us on the right track. Particular thanks to Dr. Jack Cohen of Winnipeg for sending the museum the full Hight Tracer kit complete with instructions.

If you have a dental article that needs identification, please contact Dr. Ralph Crawford, c/o the Dentistry Canada Museum, 427 Gilmour St., Ottawa, ON K2P 0R5.

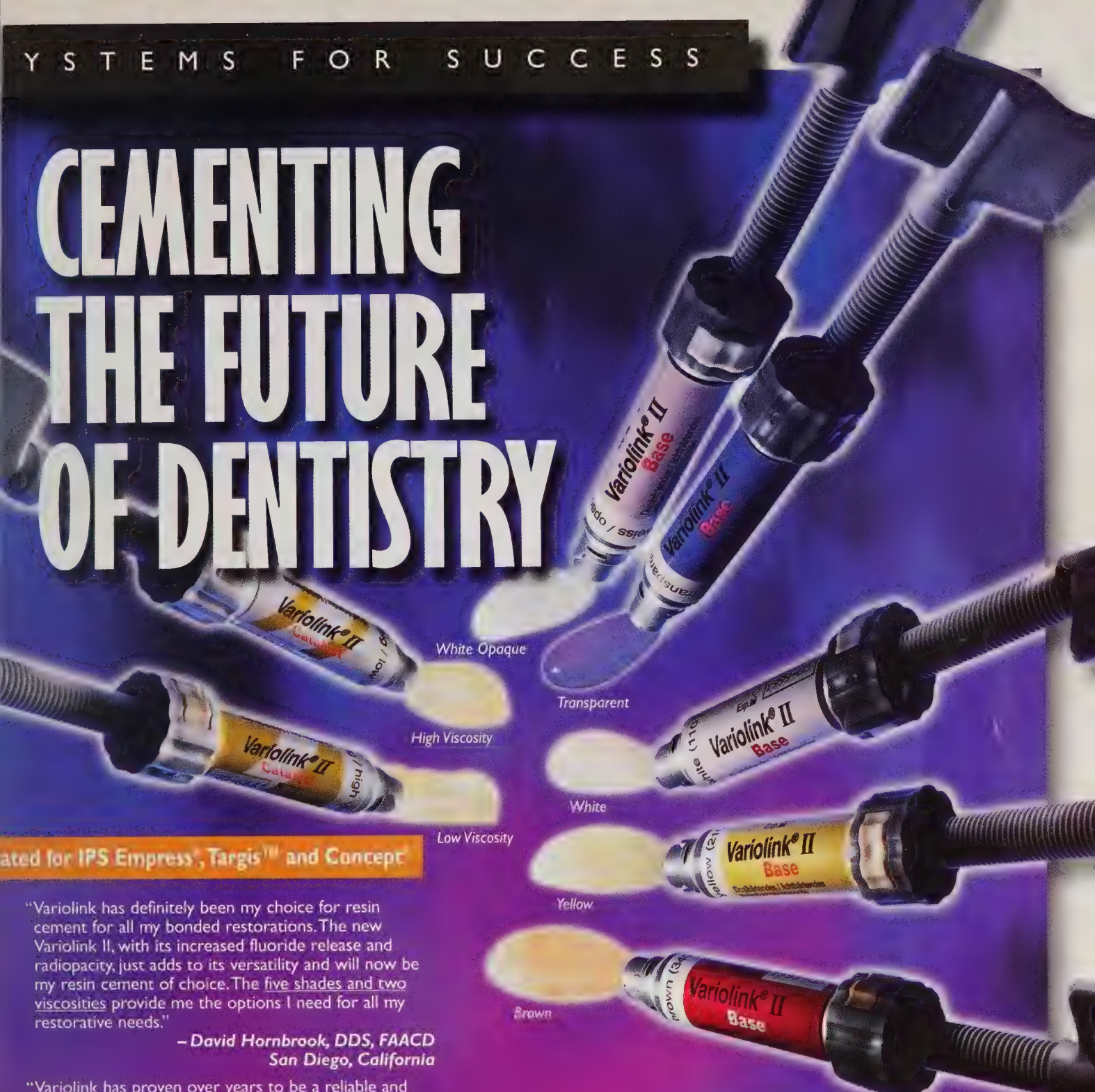


This month's "What's It" is both puzzling and intriguing. The instrument, which measures about 10 centimeters between the jaw openings, came to the Dentistry Canada Museum with a collection of instruments from a practice dating back more than 100 years. It is puzzling because we have no idea what role it played in dentistry and it is particularly intriguing because the "button" is inscribed with **H.A. King, D.D.S.**

Any reader with information regarding the purpose of the instrument and/or the identity of Dr. King is asked to contact Dr. Ralph Crawford, c/o Dentistry Canada Museum, 427 Gilmour Street, Ottawa, ON K2P 0R5 ■

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SELF-LEARNING SELF-ASSESSMENT

The SLSA Program is published as a monthly feature in the *Journal of the Canadian Dental Association* as a resource for dentists. For further information see the September 1998 issue of the *Journal*.

QUESTION 16

You have decided to place a bonded amalgam in a badly broken down molar tooth.

Which of the following are required for a satisfactory restoration?

1. Resistance form
2. Pin retention
3. Mechanical retention
4. Cusp protection
5. Enamel and dentin conditioning.

A. 1, 2, 3 and 5

B. 1, 2, 4 and 5

C. 1, 3, 4 and 5

D. All of the above

ANSWER: C

RATIONALE

Bonding amalgam to tooth structure with an acid etch technique and placement of a resin adhesive is making some principles of the traditional amalgam cavity preparation obsolete.

The cavity for an amalgam bonded restoration still requires an adequate form of resistance. Any fragile cusps and walls should be reduced and protected with amalgam.

In large wide complex cavities, some form of mechanical retention is advisable. However, combining pins with adhesives is contraindicated, since such a combination caused extensive tooth failure when observed in laboratory studies. Conditioning of the enamel and dentin with phosphoric acid and coating of both tissues with a chemically adhesive resin system is not only biologically acceptable, but it prevents marginal leakage and improves bond strength to the tooth structure.

This technique further permits more conservative cavity preparations to be made. It eliminates the use of retention pins with the risk of pulp exposure and periodontal perforation. Tooth structure is reinforced, and there is a reduced incidence of post-operative sensitivity and recurrent caries. Finally, it creates a biologic seal of the pulpodentinal complex.

REFERENCES:

1. Ianzano, J., Gwinett, J.A. Strength of amalgam bonded with 4/META. *J Dent Res* 70:300, 1991

2. Gwinett, J.A., Baratieri, L.N., Monteiro, S. et al. Adhesive restorations with amalgam: Guidelines for the clinician. *Quintess Int* 25:687-95, 1994.

QUESTION 17

In children, gingival recession on the labial aspects of permanent mandibular incisors

1. is found in 8-10 % of children.
2. should be corrected as soon as possible by gingival grafts.
3. requires correction by lateral flap surgery.
4. is self correcting.

A. 1 and 2

B. 1 and 3

C. 1 and 4

D. 4 only

ANSWER: C

RATIONALE:

The literature reports that approximately 8-10 % of children show labial recession on permanent mandibular incisor teeth. It has become common practice to subject these teeth to surgical procedures of either a lateral sliding flap or a free gingival graft and when orthodontics is contemplated, the surgical repair usually precedes the orthodontic therapy.

A recent study, however, of children aged 6-13 years allowed observation and measurement from the gingival margin of the recessed areas to the cemento-enamel junction. Observation over 1, 2 and 3 years saw a gradual reversal of the recession. No one site was worse and the majority improved. Therefore, observation rather than active surgical treatment should be the rule.

REFERENCES:

1. Andlin-Sobocki, A., Marcussen, A., Persson, M. et al. Gingival recession in children. *J Clin Periodont* 18:155-9, 1991.

QUESTION 18

Tinnitus is a ringing sound perceived as coming from the ear.

Tinnitus can be associated with temporomandibular disorder (TMD).

- A. The first statement is true, the second is false
- B. The second statement is true, the first is false
- C. Both statements are true

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D. Both statements are false

ANSWER: C

RATIONALE:

Tinnitus, a sound within the ear or the head, can be described as a ringing, buzzing noise. Almost 17% of the general population appear to be affected. The character and intensity are variable amongst people, and fluctuation and degree of intensity can vary for any one person. It is a symptom, not a disease.

Etiology can be local or systemic and can be caused by anything from impacted ear wax to a variety of pathological conditions, notably Menière's disease. Tinnitus can be associated with TMD, facial muscle pain, headaches and stress. It is exacerbated by tension or fatigue and diminished by relaxation.

Temporomandibular disorder has been widely reported as causative. Several reports have indicated that TMD therapy can improve tinnitus in 46-96% of patients with TMD.

The following findings will be helpful for the clinician in determining if the tinnitus is TMD related:

- occurs usually in a younger age group
- hearing is normal
- pain is experienced in the ipsilateral ear
- changes in character when the jaw is moved
- is reproduced or intensified when the patient clenches on the posterior teeth
- is related to stress
- is not related to loud noises
- increases when TMD symptoms worsen

REFERENCE:

1. Wright, E.F. and Bifano, S.L. Tinnitus improvement through TMD therapy. *JADA* 128:1424-32, 1997.

QUESTION 19

Which of the following are predisposing factors to oral candidal infection?

1. Age
 2. Immune deficiency
 3. Wearing of dentures
 4. Long term antibiotic therapy
 5. Uncontrolled diabetes mellitus
- A. 1, 2, 4 and 5 B. 2, 3, 4 and 5
C. 2, 4 and 5 D. All of the above

ANSWER: C

RATIONALE:

Candidiasis is a common oral fungal infection which takes many different forms. The acute pseudo-membranous form is most easily recognized and diagnosed. The white membrane is difficult to remove and leaves a painful bleeding surface. The erythematous form commonly occurs under a denture. The latter requires both treatment of the mouth infection as well as of the denture itself. Angular cheilitis may frequently become infected with *Candida* and this condition can be seen in the elderly den-

Table 1

Antifungal Agents and their Mechanisms of Action

Agent	Regimen	Main Effect
Nystatin Tablets Liquid	4 times/day x 14 days	Topical
Clotrimazole 10 mg. troche	5 times/day x 14 days	Topical
Ketoconazole	Once/day x 14 days	Systemic
Fluconazole	Once/day x 14 days	Systemic

ture wearer who has lost vertical dimension of the jaws. However, age and denture wearing in and of themselves are not predisposing factors to *Candida* infection.

In the young adult, if candidiasis is present, the differential diagnosis must include the human immunodeficiency virus (HIV). Diabetes mellitus can also result in an immunocompromised state and this, in turn, to a chronic atrophic form of candidiasis.

Treatment consists of the use of antifungal agents such as nystatin, clotrimazole, ketoconazole, and fluconazole. **Table 1** shows the mechanisms of action and the regimens for their use. It must be noted that clotrimazole, ketoconazole, and fluconazole are all metabolised by the liver. Particular attention must be paid to patients taking the antihistamine terfenadine (Seldane) or astemizol (Hismanol) since with the above antifungals there is an adverse drug interaction which may result in cardiac arrhythmia.

A recent article² indicates that, where candidiasis is related to HIV infection, candidal colonization develops within any carious dentin. From this site, it acts as a continual source of infection. As a result, it is recommended that all carious lesions be restored to provide better protection for the HIV patient.

REFERENCES:

1. Niessen, L. Oral Pharmaceuticals and adult dental patients. Special Supplement, Oral Pharma. Symposium. *JADA* 125:54S-63S, 1994.
2. Jacob, L.S., Flaitz, C.M. Nicols, M.C. et al. Role of dental carious lesions in the pathogenesis of oral candidiasis in HIV infection. *JADA* 129:187-94, 1998.

QUESTION 20

Periodontal disease can place a patient at higher risk for coronary heart disease (CHD).

The risk of coronary heart disease (CHD) is greater in men under 50 years of age with periodontal disease and few remaining teeth.

- A. The first statement is true, the second is false.
- B. The second statement is true, the first is false.
- C. Both statements are true.
- D. Both statements are false.

ANSWER: C

RATIONALE

A relationship between coronary heart disease (CHD) and periodontal disease was first reported in the British Medical Journal in 1989. Since then, several studies have further demonstrated a link. In one study, men under the age of 50 years showed a greater tendency to CHD than those over 50 years when periodontal disease and tooth loss of the study group was factored in. In a retrospective study involving over 44,000 male health professionals, the number of teeth was also found to be important. Those with periodontal disease and 10 teeth or less were found to be more susceptible to CHD than men with 25 teeth or more and periodontal disease. In subjects without periodontal disease, no relationship was found between CHD and numbers of missing teeth. It is felt that endotoxins produced by the bacteria involved in periodontal infection may affect the endothelial lining of the blood vessels, plasma lipoprotein metabolism, and blood coagulation, as well as the synthesis of prostaglandins and, in this way, induce atherosclerosis and subsequent coronary heart disease.

REFERENCES:

1. Beck, J.D. The relation of periodontal infection to systemic diseases. *J Periodont* 67:1123-1137,1996.
2. Joshipura, K.J. Poor oral health and coronary heart disease. *J Dent Res* 75:1631-1636,1996.
3. Douglass, C., Ed. *The Oral Care Report* Vol. 7 No. 1, 1997.

THIS MONTH'S FIVE NEW QUESTIONS

QUESTION 21

Retrograde periodontitis

- 1. relates to pulpal disease.
 - 2. creates a pseudo pocket.
 - 3. originates from the tooth apex and accessory canals.
 - 4. results in permanent damage to cementum.
- A. 1, 2, 3 B. 1 and 3 C. 2 and 4
D. 4 only E. All of the above

QUESTION 22

The "hybrid layer" in the new dentin bonding systems

- A. is a combination of dentin and polymer resin.
- B. forms a non-diffusible layer to protect the odontoblasts.
- C. acts as a barrier to dentinal fluid.
- D. prohibits invasion of dentinal tubules by microorganisms.
- E. All of the above

QUESTION 23

A bonded amalgam

- 1. prevents marginal leakage.
 - 2. reduces postoperative sensitivity.
 - 3. creates a biologic seal of the pulpodentinal complex.
 - 4. requires the use of retention pins in large restorations.
- A. 1, 2, 3 B. 1 and 3 C. 2 and 4
D. 4 only E. All of the above

QUESTION 24

A maxillary right first premolar requires extraction because of failed endodontic therapy. Adequate bone is present to permit placement of an implant. You would extract the tooth and

- A. place an immediate implant.
- B. perform thorough curettage of the socket followed by immediate implant insertion.
- C. perform thorough curettage of the socket and place an immediate implant with a rotational flap to achieve primary closure.
- D. allow for a period of healing prior to implant placement.

QUESTION 25

Gingival recession on the labial of permanent mandibular incisors in children is self-correcting.

Eight to ten percent of children show labial gingival recession on permanent mandibular incisor teeth.

- A. The first statement is true, the second is false.
- B. The second statement is true, the first is false.
- C. Both statements are true.
- D. Both statements are false.

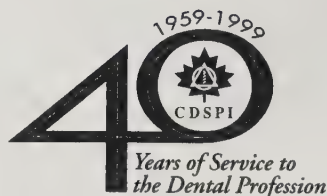
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After 40 Years, There Are 40 Ways CDSPI Serves Dentists Best

On January 9, Canadian Dental Service Plans Inc. (CDSPI) celebrated its 40th year of service to the dental profession.

From its humble origins with a minimal staff and an original mandate to provide accounting and administration services to several provincial dental payment programs, CDSPI has indeed come a long way. Today, CDSPI's staff of about 55 serves the dental profession by administering broad-ranging insurance and investment programs as well as by overseeing a host of other services specifically designed to serve the unique needs of the dental profession.

There has been an astonishing amount of change in our society and in dentistry over CDSPI's history. When the organization was formed in 1959, officials in our government began overseeing the construction of the "Diefenbunker" to protect themselves in the event of a nuclear war. And back then, dental technologies like laser surgery, video imaging and routine implantology were inconceivable to dentists.

As the dental profession made great evolutionary leaps over the past four decades to better serve the public, CDSPI grew right along with it to better serve dentists.

It is fitting that as CDSPI celebrates its 40th birthday, the organization can demonstrate how it has evolved by pointing to 40 products and services that give dental professionals an edge:

The insurance plans that CDSPI administers for the CDA and co-sponsoring provincial dental associations have evolved into the most comprehensive insurance program available to dentists, and among the most comprehensive available to any professional group in Canada. Within the *Canadian Dentists' Insurance Program* are 13 comprehensive insurance plans that have been created specifically with the dental profession in mind. Encompassing personal, liability and practice insurance, the plans within the Program include: Basic Life⁽¹⁾, Dependents' Life⁽²⁾, Term 100⁽³⁾, Long-Term Disability⁽⁴⁾, Accidental Death and Dismemberment⁽⁵⁾, Hospital Cash⁽⁶⁾, Travel⁽⁷⁾, TripleGuardTM⁽⁸⁾, Office Overhead Expense⁽⁹⁾, Dental Office Staff⁽¹⁰⁾, Personal Umbrella Liability⁽¹¹⁾, Malpractice⁽¹²⁾ and Legal Expense Insurance⁽¹³⁾.

In order to help new dentists develop their own insurance programs, the Canadian Dentists' Insurance Program also includes the GradPack⁽¹⁴⁾ — an insurance package of important coverages offered at no cost to dentists who have just begun to practise.

Additionally, CDSPI constantly compares your personal and office plans⁽¹⁵⁾ to private insurance coverages and coverages available through other groups to ensure dental professionals have an edge and to identify the need to improve coverage. Time after time, the results of these independent comparison studies clear-

ly demonstrate the Program's plans offer greater value for the majority of dentists. This explains why the Program is by far the largest single source of insurance for dentists in Canada for all major personal and office plans.

Additional insurance services provided by CDSPI include assistance and information through fully trained service representatives⁽¹⁶⁾, an Emergency Claims Response Service⁽¹⁷⁾ and a Claims Assistance Service⁽¹⁸⁾ — all available at the touch of a phone. Additionally, CDSPI offers participants convenient insurance premium payment options⁽¹⁹⁾.

Other products administered by CDSPI are investment vehicles offered under the *Canadian Dentists' Investment Program*. These are an integrated set of investment products that provide dental professionals with an effective means to help them reach their financial planning goals.

Investors can choose between investment plans with a family of funds and self-directed plans featuring more investment choices. The Investment Program is comprised of seven plans: the CDA RSP⁽²⁰⁾, the CDA RIF⁽²¹⁾, the CDA Seg Fund Investment Account⁽²²⁾, the CDA Self-Directed RSP⁽²³⁾, the CDA Self-Directed RIF⁽²⁴⁾, the CDA Investment Account⁽²⁵⁾ and the CDA Mutual Fund RESP⁽²⁶⁾.

Accompanying the Investment Program are an array of services provided by CDSPI, including administrative assistance⁽²⁷⁾ with

your investments, financial guidance and information⁽²⁸⁾ as well as convenient payment options⁽²⁹⁾. CDSPI can also provide you with information to access your CDA fund investments⁽³⁰⁾ through the telephone and Internet.

As well as providing the administration of insurance and investment programs, CDSPI's mandate has grown over the years to meet other needs of the dental profession. Programs have been developed under the *Member Services* banner to provide dentists, their extended families, and staff with an edge they wouldn't normally find on the general market. These programs include an Insurance Review Service⁽³¹⁾, the CDSPI Group Mortgage Advantage Program⁽³²⁾, the Canadian Dental Auto Leasing Program⁽³³⁾, the Members' Assistance Program⁽³⁴⁾ and the CDSPI Security for Business Program⁽³⁵⁾.

CDSPI also works hard to maintain open lines of communication with dentists through the CDSPI Edge Newsletter⁽³⁶⁾, the Internet⁽³⁷⁾ at **cdspi.com**, informative brochures⁽³⁸⁾, planning booklets⁽³⁹⁾ as well as other venues such as financial planning seminars⁽⁴⁰⁾.

In spite of the organization's successes over the past 40 years, CDSPI isn't resting on its laurels. On behalf of the company's owners — the CDA and nine co-sponsoring provincial dental associations, CDSPI continually reviews the programs and services it administers (and updates them as required) so they continue to offer the benefits dentists need and want.

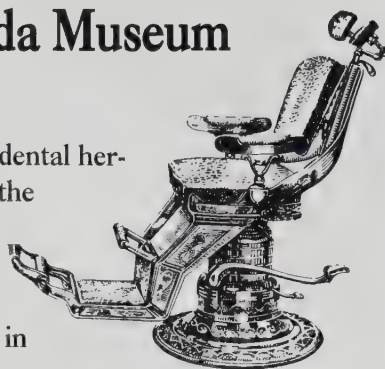
As CDSPI prepares to enter the new millennium, plans to address the future needs of the dental profession are already in the works. CDSPI is presently examining the prospect of introducing new insurance and investment plans as well as additional Member Services programs.

Just as the dental profession has adapted to the changing needs of patients, CDSPI has adapted to the changing needs of dentists over the years. But what hasn't changed is CDSPI's commitment to continually evolve and expand to meet the future needs of the dental profession. ■

Dentistry Canada Museum

Donations Requested

Memorabilia from our rich dental heritage are now on display in the Resource Centre at the Canadian Dental Association headquarters and the Dentistry Canada Museum in downtown Ottawa.



Donations of museum quality dental artifacts and documents are being accepted and are very much appreciated. Items of value may be eligible for tax receipts.

For further information on how you may participate in contributing to our rich dental history, contact Dr. Ralph Crawford, Dentistry Canada Museum, 427 Gilmour St., Ottawa, ON K2P 0R5, (613) 236-4763, fax (613) 236-3935.

THE DEADLINE IS LOOMING... HAVE YOU MADE YOUR CDA RSP CONTRIBUTION?

The March 1 deadline to make your 1998 CDA RSP contribution is fast-approaching, but don't wait until the last minute! Since many investors wait until the deadline to make their contributions, equity markets typically climb during this period. To get better value for your investment, consider beating the rush by making your contribution today.

You may also want to consider using a new fund within your CDA RSP — the CDA Ethical Balanced Pooled Fund. The latest component of the Canadian Dentists' Investment Program, this fund may be particularly attractive to investors who seek the potential for high investment returns over the long term through investments in companies whose activities do not exploit the environment or people. The CDA Ethical Balanced Pooled Fund is a medium risk fund that invests in Canadian stocks and bonds as well as U.S. equities. Its goal is to achieve a balance of both income and growth while preserving the capital invested.

If you don't have a CDA RSP, now is the perfect time to invest in one. Its features include a unique level of security with creditor protection (when certain conditions are met) and no fees other than low management fees ranging from 0.67 per cent to 1.77 per cent.

And remember, despite the recent market volatility, equity investments held within an RRSP have historically performed better than cash investments (like GICs) over the long run.



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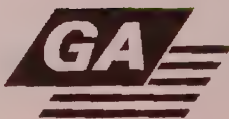

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CDA Fund Performance (for period ending November 30, 1998)					RRSP Eligible
	1 year	3 years	5 years	10 years	
CDA CANADIAN GROWTH FUNDS					
Aggressive Equity Fund (Altamira)	-21.1%	8.6%	n/a	n/a	✓
Common Stock Fund (Altamira)	0.8%	5.6%	5%	8.1%	✓
Canadian Equity Fund (Trimark) ⁺¹	-4.2%	8.2%	7.8%	10.5%	✓
Special Equity Fund (KBSH) ⁺²	-9.7%	26.7%	20.4%	n/a	✓
TSE 35 Index Fund (Sun Life of Canada) ⁺⁺	2.3%	14.2%	12.7%	9.8%	✓
CDA INTERNATIONAL GROWTH FUNDS					
Emerging Markets Fund (KBSH)	-11.7%	-12.4%	n/a	n/a	✓
European Fund (KBSH)	30.1%	23.6%	n/a	n/a	✓
International Equity Fund (KBSH)	18.1%	10.8%	n/a	n/a	✓
Pacific Basin Fund (KBSH)	7.5%	3.1%	n/a	n/a	✓
US Equity Fund (KBSH) ⁺³	12.6%	20.7%	18.3%	17.7%	✓
Global Fund (Trimark) ⁺⁴	3.7%	11.5%	14.0%	16.0%	✓
Global Stock Fund (Templeton) ⁺⁵	8.6%	n/a	n/a	n/a	✓
S&P 500 Index Fund (Sun Life of Canada) ⁺⁺	31.1%	30.9%	25.6%	21.1%	✓
CDA INCOME FUNDS					
Bond & Mortgage Fund (Canagex)	6.5%	8.3%	7.7%	10.1%	✓
Fixed Income Fund (McLean Budden) ⁺⁶	7.7%	10.1%	9.0%	10.8%	✓
CDA CASH AND EQUIVALENT FUND					
Money Market Fund (Canagex)	4.2%	4.0%	4.7%	6.9%	✓
CDA GROWTH AND INCOME FUNDS					
Balanced Fund (KBSH)	2.5%	11.2%	9.1%	9.9%	✓
Balanced Fund NR (KBSH) ⁺⁺⁺	n/a	n/a	n/a	n/a	
Ethical Balanced Pooled Fund (Ethical Funds) ⁺⁺⁺⁺	-3.9%	9.4%	7.9%	n/a	✓

CDA figures indicate annual compound rate of return. All fees have been deducted. As a result, performance results may differ from those published by the fund managers. CDA figures are historical rates based on past performance and are not necessarily indicative of future performance.

⁺ Returns shown are those for the following funds in which CDA funds invest: ¹Trimark Canadian Fund, ²KBSH Special Equity Fund, ³KBSH US Equity Fund, ⁴Trimark Fund, ⁵Templeton Global Stock Trust Fund, ⁶McLean Budden Fixed Income Fund.

⁺⁺ Returns shown are the total returns for the indexes tracked by these funds.

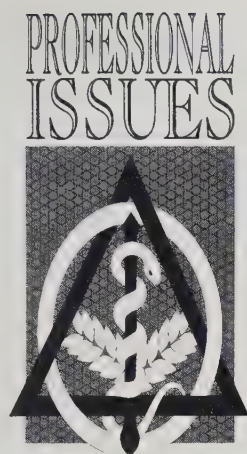
⁺⁺⁺ Introduced in September 1998.

⁺⁺⁺⁺ The CDA Ethical Balanced Pooled Fund invests in a fund that mirrors the Ethical Balanced Fund (Ethical Funds).

For current unit values and GIC rates call CDSPI toll-free at 1-800-561-9401, ext. 350 or visit the CDSPI website at www.cdspi.com.



CDSPI



The Law and Ethics in Relation to Dentists Treating HIV-Positive Patients: Report on a Recent U.S. Supreme Court Case

Peter E. Graham, BA, BCL, QC
Mili Harel-Raviv, DMD, Dip. Oral Med.

ABSTRACT

The U.S. Supreme Court confirms that an HIV-seropositive patient is a "handicapped" person even if totally asymptomatic. Hence, the patient is illegally discriminated against if a dentist consequently refuses to treat the person in the same manner in which he or she treats other patients. Canadian dental care providers should be aware of this decision, because it is reasonable to expect that the high-level Canadian courts and the Supreme Court of Canada would follow this U.S. Supreme Court decision. In addition, the U.S. judgment in effect supports judgments in recent Canadian lower court cases.

MeSH Key Words: dental care for chronically ill/legislation and jurisprudence; ethics, dental; HIV seropositivity.

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Introduction

In Canada, various cases have been brought against dentists by asymptomatic HIV-seropositive patients whom the courts or administrative tribunals declared physically or mentally impaired or "handicapped". This declaration was crucial, because the infected patients consequently qualified for legal protection against discrimination — that is, the treating dentists could not (a) refuse to treat these patients as a general office policy nor (b) refer them elsewhere for treatment simply because they were HIV seropositive and (c) perhaps could not use more precautions than the general guidelines of the Canadian Dental Association to protect themselves when treating the patients.¹⁻³ Several such patients instituted successful legal recourses against the

offending dentists, both in Canada and in the United States.

How sound are the Canadian judgments? The basis on which the patients were able to bring illegal discrimination claims against the dentists in each case hinged upon the theory that an asymptomatic HIV-seropositive person is a "handicapped person" as defined by judgments applying to laws protecting human rights. From the moment that a person becomes infected and throughout every subsequent stage, HIV infection satisfies the statutory and regulating definition of physical or mental impairment.

For oral health care providers who question whether asymptomatic HIV-seropositive patients are legally defined as handicapped, the following U.S. Supreme Court judgment offers directions for the appropriate management of such

patients from the moment they report they are infected.

The U.S. Supreme Court Case of *Bragdon v. Abbott*⁴

In September 1994, Ms. Sidney Abbott had a prescheduled dental appointment with Dr. Randon Bragdon. She filled in the Patient Registration and Health Record information card in Dr. Bragdon's dental office and indicated that she was HIV seropositive. Dr. Bragdon, who has operated a dental practice in Bangor, Maine, since 1975, read this information. When he examined Ms. Abbott and found that she had a cavity to be treated, he explained that pursuant to his infectious disease policy he would not treat her in his office but would be willing to treat her in a hospital at no extra charge; however, she would have to pay for use of the hospital's facilities.

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Ms. Abbott was asymptomatic. She had become infected eight or nine years before. She did not accept the fact that Dr. Bragdon refused to treat her in his office in the same manner as other patients. She initiated legal action against him, based on the American legislation concerning illegal discrimination against handicapped people: the Americans with Disabilities Act (1990). Ms. Abbott won her case in the Lower Court and also in the Appeal Court. Dr. Bragdon then appealed to the U.S. Supreme Court.

The U.S. Supreme Court examined many American laws and regulations concerning disabilities. In August 1998, by a five to four majority decision, the Court found that both in the interpretation of statutes dealing with disabilities and in regulations issued pursuant to such statutes, HIV infection — *whether symptomatic or asymptomatic* — is a disability.

This is the first time this question has been decided by the highest court of the United States, although there have been numerous judgments at a lower level that have held that asymptomatic HIV infection is a disability under various human rights laws.

In *Bragdon v. Abbott*, the U.S. Supreme Court held that even though respondent's HIV infection had not progressed to the symptomatic phase, it was a disability under Section 12192(2)(A), [*3] of the Americans with Disabilities Act, which defines *disability* as "a physical ... impairment that substantially limits one or more of [an individual's] major life activities."⁴

Ms. Abbott had testified that the HIV infection was a disability in a very concrete way for her in that she had renounced to her desire to have a child because of the proven risk that any child she bore would risk being infected with the HIV virus even if during her pregnancy she took medication that could reduce this risk.

The Court accepted this statement as proof of real disability, but stated that the action against Dr. Bragdon would have succeeded even without that proof because the Court was convinced

that all of the health problems caused by being HIV seropositive constitute a disability. The Court stated that sexual activity and procreation are at the root of life and its perpetuation, and whatever limits "the major life activity of reproduction" creates a disability. The decision also mentions that the sex life of people who are seropositive is seriously affected by the state of being infected. The danger of transmitting the virus to a man during intercourse was also referred to as an aspect of the disability of an asymptomatic HIV-seropositive female.

It is significant that the Supreme Court pointed out that American Dental Association guidelines to reduce the risk of disease transmission in the dental environment *should not be taken as an objective assessment of the level of risk*, as that Association is not a public health authority. Furthermore, said the Court, it is not clear to what extent those guidelines are based on the Association's assessment of dentists' professional and ethical duties as well as being based on the Association's scientific assessment of the risks referred to in the guidelines. The Supreme Court left it open for the Court of Appeals to further explore the issue of the risk of infection for people working in dental offices. If the scientific assessment establishes a significant level of risk for people working in a dental office and if following the Association's guidelines would not adequately cope with this risk, the scientifically established significant risk might override the obligation not to discriminate against such patients by referring them elsewhere for treatment. It would certainly be a good reason for health service providers to augment their self-protection beyond the provisions of such guidelines.

The following extracts from the *Bragdon* judgment indicate elements on which the majority opinion is based:

1. "In light of the immediacy with which the virus begins to damage the infected person's white blood cells and the severity of

the disease, we hold it as an impairment from the moment of infection. As noted earlier, infection with HIV causes immediate abnormalities in a person's blood, and the infected person's white cell count continues to drop throughout the course of the disease, even when the attack is concentrated in the lymph nodes. In light of these facts, HIV infection must be regarded as a physiological disorder with a constant and detrimental effect on the infected person's hemic and lymphatic systems from the moment of infection. HIV infection satisfies the statutory and regulatory definition of a physical impairment during every stage of the disease."

2. "Our evaluation of the medical evidence leads us to conclude that respondent's infection substantially limited her ability to reproduce in two independent ways. First, a woman infected with HIV who tries to conceive a child imposes on the man a significant risk of becoming infected."
3. "Second, an infected woman risks infecting her child during gestation and childbirth, i.e., perinatal transmission. Petitioner concedes that women infected with HIV face about a 25% risk of transmitting the virus to their children."
4. "The Act addresses substantial limitations on major life activities, not utter inabilities. Conception and childbirth are not impossible for an HIV victim but, without doubt, are dangerous to the public health. This meets the definition of a substantial limitation. The decision to reproduce carries economic and legal consequences as well. There are added costs for antiretroviral therapy, supplemental insurance, and long-term health care for the child who must be examined and, tragic to think, treated for the infection. The laws of some States, moreover, forbid persons infected with HIV from having sex with others, regardless of consent."

5. "Based on the medical knowledge available to us, we believe that it is reasonable to conclude that the life activity of procreation ... is substantially limited for an asymptomatic HIV-infected individual. In light of the significant risk that the AIDS virus may be transmitted to a baby during pregnancy, HIV-infected individuals cannot, whether they are male or female, engage in the act of procreation with the normal expectation of bringing forth a healthy child."

6. "The existence, or nonexistence, of a significant risk must be determined from the standpoint of the person who refuses the treatment or accommodation, and the risk assessment must be based on medical or other objective evidence. Arline, supra, at 288; 28 CFR § 36.208(c) (1997); id., pt. 36, App. B, p. 626. As a health care professional, petitioner had the duty to assess the risk of infection based on the objective, scientific information available to him and others in his profession. His belief that a significant risk existed, even if maintained in good faith, would not relieve him from liability."⁴

The *Bragdon v. Abbott* judgment is very important for dentists in Canada as well as for American dentists.

Recent Canadian Cases

A number of recent Canadian cases have stated that in regard to our civil rights laws an HIV-seropositive patient is handicapped and therefore is protected against discrimination. These statements mean that no one rendering a health service or treatment to such an individual can refuse to do so on the basis that the individual is HIV-seropositive.

It is because all of these judgments were by the lowest Canadian courts and tribunals that the *Bragdon v. Abbott* judgment in the highest court of the United States is so significant here in Canada. Even though it is not a judgment by a high-level Canadian court, it is reasonable to expect that the

high-level Canadian courts and the Supreme Court of Canada would follow this U.S. Supreme Court decision. The Supreme Court of Canada does occasionally cite judgments of the U.S. Supreme Court in its own judgments.

Until this U.S. Supreme Court judgment was rendered, many Canadians wondered whether higher courts here would maintain the view of our lower courts that our civil rights laws protect an asymptomatic HIV-seropositive person against discrimination. Now there is very little doubt, and health care providers such as dentists should be aware.

We can expect that it is more probable than ever that the judgments rendered already by the lowest Canadian courts and tribunals in *Jerome v. DeMarco*,⁵ *Hamel v. Malaxos*⁶ and the case of Dr. G.G. and Mr. P.M.⁷ will be followed in the future, as the law now seems to be settled.

A review of these Canadian cases and particularly of the factual situations concerned may be helpful.

The first Canadian decision was in the Ontario Human Rights Commission case of *Jerome v. DeMarco*. This was the first case holding that an asymptomatic HIV-seropositive patient is a handicapped person. The judgment rendered in this case is summarized as follows in the *Canadian Human Rights Reporter*:

"The Board of Inquiry finds that Dr. Paul DeMarco did not discriminate against Mr. Jerome when he delayed his dental treatment because Mr. Jerome has AIDS.

"Mr. Jerome is 30 years old and a resident of Windsor. On March 29, 1990, he attended at the office of Dr. DeMarco for a scheduled dentist check-up and cleaning. Mr. Jerome alleges that he was denied treatment or discriminated against with respect to treatment because of his handicap, that is, because he is a person living with AIDS.

"The Board of Inquiry finds that AIDS is a handicap and that dental services are 'services' within the meaning of the Ontario Human Rights Code.

"However, the Board of Inquiry finds that Mr. Jerome was not denied treatment. The fact that he had AIDS was not known until Mr. Jerome arrived at the office for his appointment at 9:45 a.m. He was offered an appointment for cleaning at the end of the same day.

"The Board of Inquiry considers whether the postponing of treatment constituted discrimination in this situation, and finds that it did not. The treatment was postponed for health reasons because it was necessary for Dr. DeMarco to do the cleaning himself rather than the hygienist doing it. Because of increased susceptibility to periodontal disease, persons with AIDS require deeper cleaning which may involve curettage and local anesthetic. This cannot be done by a hygienist.

"Because Dr. DeMarco had previously scheduled appointments throughout the day, he was not available to do the cleaning himself until the end of the day.

"The Board of Inquiry finds that no discrimination occurred."⁵

The next Canadian judgment rendered was in the case of *Hamel v. Malaxos*⁶ in the Quebec Small Claims Court. In this case, when Dr. Malaxos became aware that Mr. Hamel was HIV seropositive, he refused to treat him in his office but arranged for him to be treated in a high-risk centre in a hospital. The patient refused this alternative and sued the dentist for damages, claiming that he was a handicapped person and that damages should be awarded against the dentist for having illegally discriminated against him. Judge André Soumis called many expert witnesses to the court and reviewed aspects of the history of medicine. In his lengthy judgment, Judge Soumis cited *Jerome v. DeMarco* as establishing that an HIV-seropositive person is a handicapped person and therefore qualifies as a person illegally discriminated against under human rights legislation. Damages were awarded against the dentist.

In the subsequent case of Dr. G.G. and Mr. P.M.,⁷ in which the Order of Dentists of Quebec was

also made a party, the Quebec Human Rights Tribunal closely followed the two earlier cases of *Jerome v. DeMarco* and *Hamel v. Malaxos* in concluding that Dr. G.G. was guilty of illegal discrimination when he refused to treat Mr. P.M., a patient who had disclosed that he was HIV-seropositive.

Dr. G.G. established before the Tribunal that his office had a no-treatment policy, in which he and all the staff concurred unanimously, and that he referred HIV-seropositive patients to high-risk treatment centres.

The Human Rights Tribunal found that Dr. G.G. was guilty of an illegal discrimination and fined him accordingly. He was also ordered to cease systematically refusing to treat HIV-seropositive patients at his clinic unless they could not be appropriately treated there.

Conclusion

A professional is not generally obliged to render services to every potential patient. However, he or she must not refuse to render service nor render service differently for any of the reasons recognized as illegal discrimination by human rights legislation. For example, no patient or client can be refused service or treatment because of colour, religion, age, ethnic background, *handicap* or sex. However, a patient could be refused for such reasons as that person's manner, habits, personality, financial problems, failure to cooperate, etc. A health care provider could also refuse a patient because the professional is not suitably trained or equipped to treat such cases.

It is the professional who must overcome the burden of proof to show that the refusal to treat the patient was *not* due to a reason forbidden by human rights anti-discrimination law. The professional is presumed guilty until he or she proves that there was not illegal discrimination against the person. Therefore, it is vital for health care providers to consider and follow the principles of the court rulings described above. ■

Mr. P. Graham is an assistant professor of preventive and commu-

nity dentistry, faculty of dentistry, McGill University, and Council to Coudert Brothers, a Montreal law firm.

Dr. M. Harel-Raviv on the staff of the Sir Mortimer Davis Jewish General Hospital, Department of Dentistry, Montreal.

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INFORMATION PACKAGE

For more information on ethics and dentistry, CDA members can order a selection of reading materials by contacting the CDA Resource Centre at:

Tel.: 1-800-267-6354 (ext. 2223),

Fax: (613) 523-6574,

E-mail: library@cda-adc.ca.

Letters

Continued from page 11

Assoc 1998; 64:698-9). Let me consider the fee of a simple extraction which Dr. Christensen describes in his article in the November issue as being terribly low. Patient is seated by the auxiliary, time to anesthetize the patient is approximately two minutes, after patient is anesthetized, time to remove tooth (simple extraction) is two minutes. Fee is \$44.48. Hourly fee is \$667.20!!

By the way, the suggested fee for a simple extraction in Quebec is \$40.00.

Mark Lazare, DDS, FAGD
Beaconsfield, Que.

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The AAO, through news coverage and national TV advertising, is urging parents to

take their children for early orthodontic screenings. You'll have the opportunity to conduct more early screenings, or to refer patients to an orthodontist for screenings. You may want to ask your orthodontic colleague for a presentation or literature on orthodontic diagnostics. Or you can contact the AAO at (314) 993-1700 or our web site, www.braces.org.

With early orthodontic screening, you can give your young patients a head start on a healthy smile.



American Association of Orthodontists

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A full-page photograph of a woman with blonde hair, wearing a white short-sleeved tennis shirt and a white skirt with red piping. She is captured in a dynamic pose, swinging a tennis racket with both hands. A yellow tennis ball is visible in the air near the racket head. The background is a dark, out-of-focus area, possibly a tennis court fence or trees. The ground is a reddish-brown color, likely a clay court.

She's also a dentist.

Chantal Fortier, Dentist, CDA member and avid tennis player.

Chantal loves a good tennis match. There's nothing she likes more than playing tennis with her friends. Except maybe her career. That's why she's a CDA member. CDA allows Chantal to enjoy her free time as much as her profession.

CDA equips young dentists with the resources they need to plan and build successful careers. CDA's annual convention provides valuable networking opportunities, practice management seminars, and exposure to the latest in dental technology. The CDA Resource Centre, Journal, Communique and website are powerful communication tools relaying the latest information on clinical and professional issues affecting Canadian Dentistry today. CDA's initial role as coordinator of national issues, such as the development of Clinical Practice Guidelines, ensure the future security of the profession is being protected. So when Chantal plays tennis, all she has to concentrate on is whether that ball will be in...or out.



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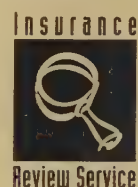
- ▶ The **Canadian Dental Auto Leasing Program** offers competitive lease rates on new and used vehicles, unlimited choice of makes and models, flexible lease terms and payment schedules, and outstanding service for all dentists, their extended families and staff. Call Newcourt Vehicle Leasing at 1-800-461-2923 or (905) 212-6471.



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CLINICAL PRACTICE



Les chirurgies Le Fort I, ostéotomie sagittale et génioplastie ainsi que leurs conséquences sur l'articulation temporo-mandibulaire

(Le Fort I, Sagittal Osteotomy and Genioplasty and Their Effects on the Temporomandibular Joint)

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ABSTRACT

Dentofacial deformities of the jaws, teeth and middle and lower thirds of the face affect both function and appearance.

Epidemiological studies show that many Americans suffer from a malocclusion, which alters the proportions of the face. Moreover, in about 5 per cent of cases, the deformity is great enough to cause a severe handicap.

A number of years ago, only orthodontic therapy was available, its aim being to achieve an acceptable occlusal relation while improving appearance as much as possible. However, this therapy provided limited improvement. Consequently, serious cases were later treated surgically. Since the 1970s, new surgical techniques have made it possible to reposition the jaws or dentoalveolar segments. As a result, today many more cases are treated in collaboration with orthodontists and surgeons.

This article summarizes the main orthognathic surgical techniques, their procedures and their effects on temporomandibular disorders.

MeSH keywords: malocclusion/surgery; osteotomy/methods; temporomandibular joint disorders/physiopathology.

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Introduction

Le terme «chirurgie orthognathique» implique principalement deux types de procédures chirurgicales, soit : l'ostéotomie Le Fort I et l'ostéotomie sagittale. Aussi, la génioplastie est une procédure souvent adjointe aux chirurgies orthognathiques.

L'ostéotomie Le Fort I sert à corriger les malformations dentofaciales du maxillaire supérieur. Par cette procédure, le chirurgien peut effectuer une impaction, une augmentation verticale, un recul, un avancement, une expansion palatine ou un déplacement latéral du maxillaire supérieur. Par la technique de l'os-

téotomie Le Fort I segmentaire, le chirurgien peut fermer des béances (*open bite*) antérieures ou postérieures et corriger des excès verticaux ou horizontaux, unilatéraux ou bilatéraux du maxillaire.

L'ostéotomie sagittale sert, quant à elle, à corriger les malformations dentofaciales du maxillaire inférieur. Cette technique est effectuée pour un avancement ou un recul du maxillaire inférieur dans les cas respectifs d'un patient rétrognathe ou prognathe. Lorsque l'ostéotomie Le Fort I est effectuée, il est souvent nécessaire de procéder à l'ostéotomie sagittale pour obtenir une relation intermaxillaire maximale.

Enfin, la génioplastie est utilisée pour corriger les malformations du menton. Par cette procédure, le chirurgien peut procéder à un avancement, un recul, une impaction, une augmentation verticale ou un déplacement latéral du menton et, ainsi, faire concorder le menton osseux avec le menton musculaire et éliminer l'incompétence labiale.

Toutes ces procédures chirurgicales sont longues et complexes. Elles sont effectuées en milieu hospitalier, sous anesthésie générale, par un chirurgien buccal et maxillo-facial, et nécessitent une hospitalisation de quelques jours.

Journal

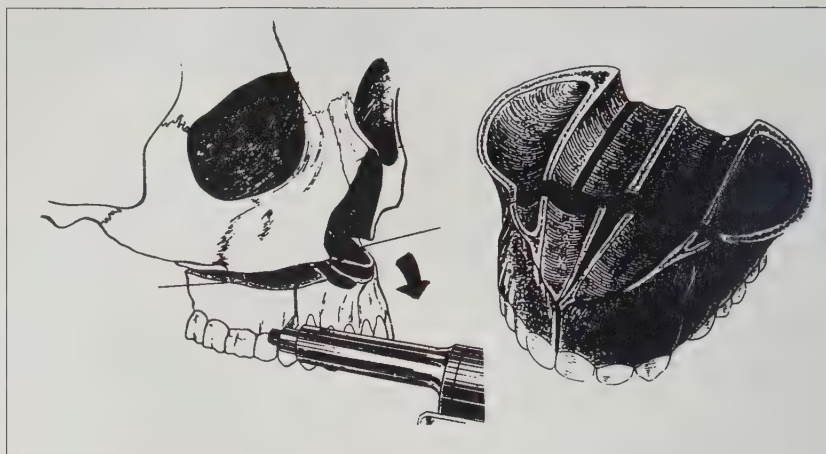
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L'ostéotomie Le Fort I

Un bistouri ou l'électrochirurgie sont utilisés pour effectuer une incision horizontale dans le vestibule du maxillaire au-dessus de la jonction mucogingivale. L'incision s'étend de la région de la deuxième molaire jusqu'à la même région contralatérale du maxillaire. Le lambeau supérieur est élevé afin d'exposer la paroi latérale, l'apophyse zygomatique, l'épine nasale antérieure, la crête piriforme ainsi que la jonction ptérygomaxillaire. Pour assurer une circulation sanguine maximale à l'os maxillaire et aux dents, le lambeau inférieur n'est relevé qu'au niveau de la muqueuse et du périoste qui recouvre l'apex des dents.

Une rugine est utilisée pour détacher le mucopérioste du plancher et de la paroi latérale de la fosse nasale, ainsi que de la base du septum nasal. Un élévateur à périoste est ensuite mis en place pour protéger la muqueuse nasale lorsque la paroi nasale latérale sera sectionnée.

La portion postérolatérale du maxillaire est accessible en plaçant un ostéotome à angle sur la suture ptérygomaxillaire. La localisation des apex des dents est faite par visualisation et palpation de l'os ainsi qu'en prenant des mesures sur les radiographies céphalométrique et panoramique. Une fois les apex localisés, une ligne horizontale est gravée sur la paroi latérale de l'os maxillaire à environ 4 ou 5 mm au-dessus des apex. Des lignes verticales antérieures et postérieures sont aussi gravées afin de servir de références lorsque le maxillaire aura été mobilisé. Dans les cas où une impaction est désirée, une deuxième ligne horizontale est gravée au-dessus de la première, la distance entre ces deux lignes représentant la quantité d'os à être enlevée de la paroi latérale du maxillaire. Il arrive fréquemment que ces lignes ne soient pas parallèles parce que les mouvements verticaux des parties antérieure et postérieure du maxillaire sont souvent inégaux — une plus grande quantité d'os est enlevée dans la partie postérieure pour les patients ayant une béance anté-

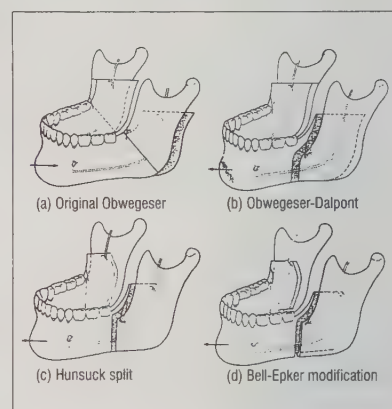


III. 1 : Ostéotomie Le Fort et segmentation permettant un recul, un avancement, une impaction et une expansion, selon le cas. Tiré de *Oral and maxillofacial surgical techniques*⁶.

rieure. Une lame de scie ou une fraise à fissure est utilisée pour exciser l'os se trouvant entre les deux lignes, s'étendant de la crête piriforme jusqu'à la suture ptérygomaxillaire en passant par la fosse canine et l'apophyse zygomatique. Avec la rugine dans la fosse nasale pour protéger le mucopérioste nasal, l'incision est effectuée dans les parois latérales et antérieures du maxillaire et de la fosse nasale.

Après avoir enlevé l'os se trouvant entre les deux incisions, la paroi nasale latérale, dans sa partie antérieure, est sectionnée à l'aide d'une fraise à fissure alors que sa partie postérieure et la paroi postérieure du sinus maxillaire sont sectionnées à l'aide d'un ostéotome mince.

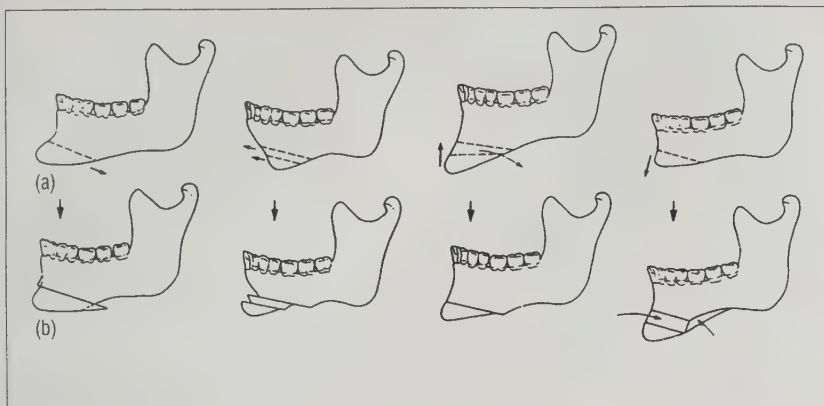
Ensuite, un ostéotome à septum nasal est positionné au-dessus de l'épine nasale antérieure, parallèle au palais dur, martelé jusqu'au bord postérieur de la cloison nasale, puis délicatement dirigé en-dessous, le long du plancher de la fosse nasale tout en veillant à ne pas déchirer le mucopérioste de cette dernière. Finalement, un ostéotome est martelé dans la suture ptérygomaxillaire pour séparer la tubérosité du maxillaire de l'apophyse ptérygoïde. Une pression digitale sur la muqueuse palatine dans la région de l'hamulus permet au chirurgien de sentir l'ostéotome lorsqu'il sépare les deux os sans traumatiser le mucopérioste sous-jacent. L'ostéotome doit être



III. 2 : Ostéotomie sagittale mandibulaire permettant un recul, un avancement ou une fermeture de béance. Tiré de *Surgery of the mouth and jaws*.⁷

placé en-dessous de la suture afin de minimiser les risques d'endommagement des structures vasculaires dans la fosse ptérygomaxillaire. Il doit être martelé de telle sorte que la force soit dirigée médialement et antérieurement. Le maxillaire est partiellement mobilisé par la pression de l'ostéotome courbe contre la tubérosité.

En augmentant graduellement la pression inférieure exercée sur le maxillaire, on peut exposer la face supérieure du maxillaire et la paroi interne de la fosse nasale. Le mucopérioste est alors détaché du maxillaire et de la lame horizontale de l'os palatin. En manipulant délicatement les tissus mous et en utilisant un ostéotome mince, on peut exposer les vaisseaux palatins et en préserver l'intégrité.



III. 3 : Ostéotomie de la symphyse qui peut être reculée, avancée, augmentée, diminuée ou placée à la gauche ou à la droite selon le cas. Tiré de *Surgery of the mouth and jaws*.

La fracture du maxillaire est terminée manuellement. Le maxillaire est partiellement mobilisé par une pression digitale antérieure ou par la pression de l'ostéotome courbe contre la tubérosité pour séparer la face postérieure du maxillaire des attaches osseuses restantes. Par cette fracture, le chirurgien a un très bon accès à la zone qui peut être problématique, soit la lame horizontale de l'os palatin et l'interface apophyse ptérygoïde-tubérosité. Des rétracteurs sont positionnés contre la muqueuse nasale et dans la partie postérieure du maxillaire pour faciliter la visualisation pendant la séparation finale entre la tubérosité et l'apophyse ptérygoïde. La zone ainsi exposée, une hémorragie au niveau de l'artère palatine est contrôlée par pression ou ligature. De plus, les interférences osseuses peuvent être identifiées et enlevées à l'aide d'une fraise, d'un ostéotome ou d'un rongeur à os. Enfin, il est possible de terminer la séparation du maxillaire de sa face supérieure sans obstacle visuel (**III. 1**).

Le chirurgien n'a pas coutume de faire des greffes osseuses au site de l'ostéotomie. Cependant, lorsqu'un large joint est créé, on peut en effectuer une (ex. : provenant de la crête iliaque ou d'un autre site) afin d'obtenir une stabilité et une guérison plus rapide.

Le septum nasal est raccourci de sorte à repositionner, dans la partie supérieure, le plancher de la fosse nasale sans en dévier le septum que peut recevoir une petite gouttière tracée dans ce dernier.

Turbinectomie

Parfois, les cornets inférieurs peuvent interférer lors du repositionnement du maxillaire. On recommande, dans ce cas, une turbinectomie. La distance séparant les cornets inférieurs, bien qu'elle soit variable, se situe habituellement entre 5 mm et 9 mm; il est donc prévisible que lors d'une impaction du maxillaire de plus de 5 mm, les cornets inférieurs puissent interférer.

Le maxillaire est placé dans la position voulue, le tout fixé au moyen de fils métalliques ou de plaques et de vis.

L'ostéotomie sagittale

On se sert du bistouri pour effectuer une incision dans le repli mucogingival, parallèle aux dents postérieures, de la base de la branche montante à la région de la première molaire. Après l'incision initiale, les lèvres de la plaie sont séparées afin d'exposer le muscle buccinateur. Pour éviter l'herniation de la boule graisseuse de Bichat dans le champ opératoire, il est important de laisser les fibres supérieures du buccinateur intactes. Toute portion de ce muscle qui ne peut être incisée facilement peut être rétractée dans la partie supérieure afin d'exposer le bord antérieur de la branche montante.

Le muscle et le périoste sont détachés de l'os sous-jacent à l'aide d'une rugine. Un minimum de dissection sous-périostée est effectué dans la région latérale de la branche montante afin de maintenir l'attachement du muscle masséter. Cependant, dans la partie

inférieure, la dissection s'étend jusqu'à la région de l'échancrure antégoniale. Un rétracteur à angle droit en forme de «V» est ensuite positionné contre les parties antérieure et inférieure de l'apophyse coronoïde et tiré en haut par l'assistant afin de faciliter le détachement du muscle et du tendon du temporal jusqu'à ce que l'apophyse coronoïde soit exposée.

Sur la paroi médiane de la branche montante, la dissection sous-périostée s'étend du bord antérieur à la partie postérieure de la lingula afin d'exposer celle-ci et le foramen mandibulaire. Il faut opérer avec soin et précision pour ne pas endommager le nerf et les vaisseaux alvéolaires inférieurs. Seule la face supérieure du paquet vasculo-nerveux peut être visualisée. La muqueuse doit être rétractée sur la paroi interne de la branche montante afin de permettre une visualisation adéquate. Une rétraction excessive est inutile et peut étirer voire même lacérer le paquet vasculo-nerveux.

On effectue, tout d'abord, le trait d'ostéotomie du côté interne de la branche montante. Le rétracteur en place, il est habituellement possible et aisé de visualiser la paroi interne. Un trait horizontal est fait à l'aide d'une fraise à fissure ou d'une scie réciproque parallèlement au plan occlusal. Ce trait est fait juste au-dessus de l'épine de spyx et du nerf alvéolaire inférieur, à une profondeur équivalente à la demi-épaisseur de la branche montante et allant de la partie postérieure de l'épine de spyx au bord antérieur du ramus.

De multiples petits trous sont ensuite percés à l'aide d'une fraise sur la face supérieure de la branche montante et reliés par un trait. La fraise doit rester parallèle à l'axe sagittal du ramus et ne toucher en aucun cas le nerf alvéolaire en étant enfoncée trop profondément. Ce trait se termine dans la région de la première molaire inférieure. Certains opérateurs préfèrent l'emploi d'une scie oscillante.

Le trait d'ostéotomie de la partie latérale du corps de la mandibule est effectué perpendiculairement au bord inférieur de la mandibule.

Il doit atteindre l'os spongieux, sans cependant pénétrer dans celui-ci, car le faisceau alvéolaire inférieur s'y trouve. Le cortex du bord inférieur doit être complètement coupé. L'ostéotomie est ensuite inspectée pour s'assurer que l'os spongieux est visible sur toute la longueur du trait.

Le dessin des traits et la séparation de la mandibule sont basés sur l'épaisseur de l'os spongieux entre le paquet vasculo-nerveux et le cortex dans les régions préangulaire, angulaire et supraangulaire de la mandibule. La séparation commence dans la partie préangulaire de la mandibule, là où l'os spongieux entre le canal mandibulaire et le cortex est approximativement de la même épaisseur que le cortex lui-même. La séparation finale est effectuée à l'aide d'un ostéotome large (III. 2).

Lorsque les deux segments sont complètement séparés, le chirurgien doit vérifier si le nerf alvéolaire inférieur est resté coincé dans le fragment proximal de la mandibule. Si c'est le cas, le nerf doit être dégagé de l'os spongieux délicatement. Les segments peuvent ensuite être écartés, et l'intérieur est nettoyé de toute irrégularité à l'aide d'une fraise banane. Le fragment distal est alors positionné à l'endroit désiré. Si la mandibule est avancée, le nerf sera légèrement étiré, mais cela ne cause normalement pas de dommage. Enfin, les deux fragments sont fixés ensemble à l'aide de fils métalliques ou d'un système de plaques et de vis ou de vis seulement.

La génioplastie

L'incision pour la génioplastie est faite de telle façon que la circulation sanguine au bord inférieur de la mandibule est maintenue grâce à un pédicule intact de muqueuses, de muscles et de périoste. Cette incision est faite d'un bout à l'autre de la muqueuse labiale inférieure et, dans la partie postérieure, va aussi loin que nécessaire pour bien exposer l'os et le nerf mentonnier de chaque côté (habituellement dans la région de la première prémolaire).

re). Enfin, il faut veiller à ne pas endommager le nerf mentonnier.

Après avoir effectué cette incision circumvestibulaire, le chirurgien procède à une dissection sous-périostée afin d'exposer la mandibule et de localiser les deux nerfs mentonniers avant de les dégager.

Lorsque le site chirurgical est prêt, une ligne verticale est gravée au milieu du menton (dans le plan sagittal). Cette ligne servira de point de référence pour le repositionnement de la symphyse une fois mobilisée. Une ligne horizontale est ensuite gravée à l'endroit où l'ostéotomie sera pratiquée. L'étendue entre le trait d'ostéotomie et le bord inférieur de la mandibule, l'angle et la configuration du trait, la quantité d'os à exciser ou à greffer et l'extension postérieure du trait sont tous des paramètres qu'établit l'analyse céphalométrique et que différencient les changements que le menton doit subir.

Ce trait d'ostéotomie est fait à l'aide d'une scie réciproque. Idéalement, il est fait jusqu'au-dessus de la partie la plus proéminente du menton. Avec le nerf mentonnier et le lambeau délicatement rétractés, le chirurgien scie la corticale. Il continue ensuite son trait latéralement, dans la partie postérieure, juste au-dessous du trou mentonnier. Une petite semelle est placée afin de déterminer quand le cortex lingual est complètement sectionné. Si ce cortex n'est pas sectionné adéquatement, une mauvaise fracture peut se produire au bord inférieur de la mandibule. Un sectionnement complet du cortex évite ce genre de fracture. Si la procédure est bien effectuée, le segment est facilement fracturé et mobilisé en insérant un ostéotome mince entre les segments proximal et distal. S'il y a résistance à la fracture, l'ostéotomie est examinée afin de trouver un endroit où le cortex ne serait pas complètement sectionné. Le segment mobilisé est placé à l'endroit planifié. Lorsqu'il y a impaction de la symphyse, deux traits d'ostéotomie sont effectués, et la tranche osseuse est retirée.

La symphyse est ensuite immobilisée, à l'aide de fils métalliques, dans la position voulue. Lorsque la symphyse est fixée, toutes les plaies sont suturées (III. 3).

Fixation

Le chirurgien est prêt à positionner le maxillaire supérieur dans la position désirée. Trois méthodes s'offrent à lui : les ostéosyntheses avec fils métalliques, le système de plaque et de vis en titane, aussi appelé fixation rigide, ou encore une combinaison de fils et de plaques.

Le système d'ostéosynthèse à l'aide de fils métalliques est simple. Il s'agit de faire un trou sur chacune des parties à fixer, de passer le fil dans ces trous et de joindre les deux bouts de fils pour en former une petite boucle.

Le système de fixation rigide est composé de petites plaques en titane que le chirurgien peut adapter à l'os. Dans chaque plaque, des trous permettent de visser les deux parties à fixer. Il existe différentes formes et grosseurs de plaques adaptées à diverses situations.

La fixation rigide offre plusieurs avantages. Elle permet une guérison rapide de l'os par première intention — réduisant ainsi les risques de pseudarthrose — une excellente stabilisation et une augmentation de la stabilité tridimensionnelle donc le potentiel de récurrence est moins élevé. Une élimination ou une réduction de la période de fixation intermaxillaire résulte en un retour à la fonction plus rapide, augmente le confort du patient et évite les fils métalliques circummandibulaires et de suspension à l'épine nasale et aux apophyses zygomatiques. Ce système comporte cependant quelques désavantages : il coûte extrêmement cher, et la technique d'utilisation est plus complexe.

La fixation rigide est très utilisée de nos jours. Cependant, certaines fixations consistent en une combinaison des deux méthodes.

Effets des chirurgies orthognatiques sur les désordres temporo-mandibulaires

Les études épidémiologiques démontrent que les désordres temporo-mandibulaires (DTM) sont choses courantes dans la population en général. Certains auteurs rapportent une prévalence de ces dysfonctionnements allant jusqu'à 80 p. 100¹. Au fil des ans, plusieurs chercheurs ont observé et tenté d'expliquer les changements dans les désordres temporo-mandibulaires chez les patients ayant subi une chirurgie orthognatique. En voici les résultats.

Les opinions diffèrent quant aux effets des chirurgies orthognatiques sur les DTM. Certains chercheurs ont rapporté un effet favorable sur le joint temporo-mandibulaire (JTM) étant donné la diminution de l'incidence des symptômes après la chirurgie, alors que d'autres ont mis en garde contre la création ou l'accentuation des symptômes des DTM, l'induction d'une hypomobilité mandibulaire et la résorption des condyles. Selon Onizawa et coll.¹, les symptômes des DTM chez les patients ayant subi une chirurgie orthognatique ne changent pas de manière significative. En effet, un examen effectué six mois après l'opération a révélé que les bruits dans l'articulation avaient disparus dans un tiers des cas, alors que ces symptômes s'étaient accentués ou étaient apparus dans un autre tiers des patients. Aucun changement ne fut noté dans le troisième tiers. Plus de la moitié des patients n'ont subi aucun changement au niveau de la déviation à l'ouverture. Enfin, environ 60 p. 100 des patients n'ont noté aucune différence de sensibilité au niveau musculaire ou de l'ATM, et 40 p. 100 ont ressenti une amélioration de ces symptômes. Dans l'étude de Karabouta et Martis², on peut constater que 40,8 p. 100 et 11,1 p. 100 des patients souffraient de DTM, respectivement, avant et après la chirurgie. De plus, 3,7 p. 100 des patients qui n'avaient pas de DTM avant la chirurgie en ont souffert par la suite. Enfin, Magnusson et coll.³ ont démontré que les symp-

tômes des DTM augmentent dans la semaine suivant l'ablation de la fixation intermaxillaire, mais que cette situation n'est que temporaire. À l'examen final, un an et demi après la chirurgie, les mêmes auteurs ont observé une chute des symptômes de DTM.

Selon Karabouta et Martis², les effets bénéfiques de la chirurgie orthognatique sur les DTM seraient directement reliés à la correction de la malocclusion. En effet, en ayant une occlusion incorrecte, la mandibule se retrouve dans une position non-physiologique provoquant un déséquilibre de la coordination du système neuromusculaire. En ajustant l'occlusion par chirurgie orthognatique, la situation est améliorée. Cependant, selon d'autres auteurs, la correction de la malocclusion est seulement un des facteurs expliquant l'amélioration des symptômes des DTM lors des chirurgies.

Les résultats d'Onizawa et coll.¹ confirment que les changements dans les DTM pourraient ne pas découler de la correction de la malocclusion, mais plutôt de l'effet de la chirurgie sur le JTM et les muscles masticateurs.

On sait aujourd'hui que, lors d'une ostéotomie sagittale de la mandibule, il y a un déplacement du condyle dans la fosse glénoïde souvent combiné avec une rotation ou une inclinaison du condyle⁴. Ce léger mouvement pourrait être responsable, dans certains cas, de l'apparition de DTM après la chirurgie⁵ et, dans d'autres cas, de la diminution des symptômes de DTM².

Il a aussi été démontré qu'il y a une réduction de l'ouverture maximale de la mandibule immédiatement après la chirurgie². Selon Onizawa et coll.¹, la diminution des bruits de l'ATM après la chirurgie serait causée par cette réduction de l'ouverture maximale. Enfin, selon Magnusson et coll.³, les facteurs psychosomatiques joueraient un rôle très important dans les changements symptomatologiques post-chirurgicaux des DTM.

En conclusion, on ne peut pas encore expliquer tous les phénomènes qui entrent en ligne de

compte dans les DTM lors de chirurgies orthognatiques. Des recherches plus approfondies en ce domaine devraient être faites afin de mieux connaître toutes les composantes des changements observés. Cependant, on peut conclure que les chirurgies orthognatiques ont des effets bénéfiques non seulement sur l'esthétique et l'occlusion dentaire, mais aussi sur les symptômes des DTM. ■

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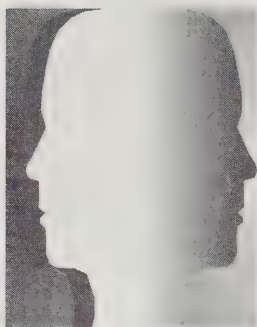
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DEBATE



The Case for a Strong Anti-Tobacco Lobby by the CDA — If Not Now, When, and If Not Us, Who?

Elizabeth MacSween, DDS

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An epidemic is defined as a disease common to or affecting a whole people or a great number in a community. Deaths related to smoking fit that definition. How else can you explain 45,000 deaths in Canada this year and three million people falling prey to tobacco-related illnesses? These numbers will include our mothers, fathers, spouses, children, brothers, sisters, patients — even ourselves. There is not a dentist in Canada today who will not feel the pain of losing someone close as a result of tobacco use.

As part of the health care community, what is our responsibility to society to help stop this epidemic? Is our profession so narrowly defined that the war against tobacco is not considered within our professional scope? Ask yourself how many of your patients have you diagnosed over the years with periodontal disease for which the biggest contributing factor was smoking? How many have you seen that have had oral cancers as a direct result of smoking? How many have leukoplakia because they smoke? How many have you lost as a result of lung cancer,

heart disease, stroke and oesophageal carcinoma? Can you still tell me that as professionals we should not be upfront and centre in the war against tobacco use?

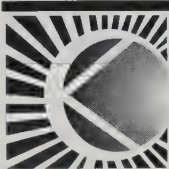
We have been leaders in promoting disease prevention. In fact, we have been so successful that, ironically, we have almost eliminated the very diseases we are trained to treat. Isn't it time we aimed our message on disease prevention at the epidemic of smoking-related diseases that we face as a society? As health care professionals, we certainly have a responsibility to our patients to make them understand the consequences of smoking on their oral health and overall health. But the larger question remains, What responsibility do we have to society in the war against tobacco use?

I believe we are fortunate as professionals to have a political structure within organized dentistry that has allowed us to use our collective resources to successfully promote our interests and those of our patients to policy makers within government. This political strength has allowed us to fashion public policy in such a way that our patients now enjoy a

world-class system of oral health care and will continue to do so in the foreseeable future. We now need to use that political strength to ensure that our patients can also enjoy a future free from the devastating effects of the deadly toxic substance that is tobacco.

Our political strength has been built over years of carefully planned strategic opportunities so that governments have come to trust our ability to articulate our concerns on behalf of our patients and to put their best interests first. We have nurtured strategic alliances that have given our voice greater power and depth when we approach government. Our patients have been one of our most important and effective allies, and together, we have created one of the most vocal lobbies ever heard on Parliament Hill. They helped us, for example, prevent a change in the tax policy that could have resulted in the dismantling of an effective system of oral health care delivery.

It is time to join the ever increasing alliance of health care providers and advocacy and citizen's groups that are demanding anti-tobacco legislation that will effectively deal, once and for all,



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with the epidemic of tobacco-related deaths and diseases.

It is time to let our voices be heard, to state emphatically that we will not tolerate the extremely manipulative practices of the tobacco industry, the selling and targeting of tobacco products to our children, the government's inaction when it comes to demanding that the tobacco industry compensate the state for the costs we have all borne in the treatment of the sick and dying, the lack of moral certitude in dealing with tobacco smuggling, and the ineffective preventative messaging being promoted by Health Canada.

In this post-Krever era, can we sit back and allow the use of tobacco products to continue? What are our obligations, as professionals, to our individual patients in terms of warning them, guiding them and, ultimately, helping them prevent the inevitable, i.e., chronic disease, disability and death? Could we possibly be held accountable for not stepping in and educating them about the dangers inherent in tobacco use? For not identifying the risk factors in their medical history and acting on them in a direct and responsible manner? This article may be just a theoretical musing, but I for one would not like to see any dentist brought before the courts in a case testing

the limits of our professional responsibilities.

We know tobacco use kills, maims and destroys life. What can we do in our offices to start being accountable to our patients because of the knowledge we all possess on the dangers of tobacco use? I believe we must first identify the patients that use tobacco products and record and monitor their use. We must inform them of the dangers inherent in their continued use of these products, direct them so they can get effective help for their addiction, and follow their progress as well as monitor their oral health for signs of tobacco-related problems.

We also have a responsibility to inform ourselves about the health-related programs available in our communities or to join other health care providers whose unique knowledge can be used to establish such programs. We must also demand that our associations and dental faculties help in providing the type of information needed to deal with the scourge that is tobacco use.

If I sound militant in my demands on the profession and our associations, so be it. I do not apologize for my position. I am passionately committed to seeing tobacco use ended in my lifetime. I am passionately committed to seeing that my child is not manipulated into thinking that tobacco use is cool,

hip and acceptable. I do not want another patient to die as a result of tobacco use and I do not want to live in a society that believes that being cool at any cost is worth the price of a pack of cigarettes.

I want our government to understand the size of this epidemic and to react to the problem immediately. This crisis is bigger than the tainted blood, Hepatitis C and HIV scandals combined. My impatience with the government's inability to react to the tragedy of tobacco use may at times blur my rational understanding of the political process, but if one wants change, one has to believe that change is possible — and I believe that it is. I also know that change won't happen until we all demand it. It is time to start demanding. It is time to display our impatience. In the future, the strength of our profession will depend on our ability to identify the issues that will benefit society the most. I for one see that eliminating tobacco use in society will be an enduring legacy we should all strive to achieve. ■

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CLINICAL PRACTICE



Exposure or Absorption and the Crucial Question of Limits for Mercury

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ABSTRACT

Health Canada recently lowered the recommended maximum daily exposure of mercury from all sources for women of child-bearing age and for children less than 10 years. This new exposure guideline does not seem to be based on any new scientific finding of human toxicity. The average daily intake of methylmercury (mainly from fish) that may cause demonstrable health effects in the most sensitive individual is 300 $\mu\text{g}/\text{day}$, or 4.3 μg Hg/day/kg body weight. The new, lower Health Canada limit is 95% below the level that may cause health effects. A number of studies have looked at methylmercury in human breast milk (where maternal consumption of fish is high), but no strong evidence of toxicity has been reported. The amount of mercury released from dental amalgam is minimal; a person would have to have 490 amalgam surfaces for there to be enough mercury vapour and ionic mercury given off from amalgam fillings to meet the maximum exposure guidelines. The uptake of food-related organic mercury is six times higher than the uptake of mercury from amalgam; moreover, food-related mercury is significantly more toxic. Many studies of amalgam-related mercury are flawed by confusion between exposure and absorption for the various forms of mercury, a limited selection of data, the ignoring of confounding variables or the misclassification of data.

MeSH Key Words: absorption; dental amalgam/adverse effects; environmental exposure; mercury/adverse effects.

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Introduction

In April 1998, Health Canada lowered the maximum daily exposure of mercury from all sources for women of child-bearing age and for children less than 10 years by 57% from 0.47 $\mu\text{g}/\text{kg}/\text{day}$ down to 0.2 $\mu\text{g}/\text{kg}/\text{day}$. This new exposure guideline does not seem to be based upon any new scientific finding of human toxicity. The average daily intake of methylmercury (mainly from fish) that may cause demonstrable health effects in the most sensitive individual is 300 $\mu\text{g}/\text{day}$, or 4.3 μg Hg/day/kg body weight.¹ The new, lower Health Canada limit is 95%

below the level that may cause health effects. This recommended lower mercury exposure has raised questions about the dental amalgam issue once again.

It is extremely misleading to look only at the exposure levels without considering the absorption levels, particularly if we consider the different chemical forms of mercury. Lipid soluble organic mercury is much more bioavailable than metallic inorganic mercury, ionic mercury or mercury vapour from dental amalgam. The organic form in food is much more insidious due to its ability to traverse lipid membranes and penetrate the central nervous system.²

Unlike inorganic or metallic mercury, organic mercury readily crosses the blood-brain barrier.³

Health Canada and Environment Canada have stated that they are concerned about industrial pollution; however, it is important to note that about 50% of environmental mercury comes from natural sources due to volatilization from the ocean and erosion of rocks. The atmosphere deposits about 2 million kg/year of mercury into oceans, and the rivers are estimated to contribute a further 200,000 kg/year.⁴ Regardless of the source of environmental mercury, a major question that science has not yet answered is what

effect mercury in the food chain has on human health.

Mercury in the Food Chain

A 20-year retrospective analysis of methylmercury in fish involving over 38,000 individuals in Canada did not find any identifiable health problems related to mercury.⁵ No negative health effects from eating contaminated fish have been established; no clinical cases of methylmercury poisoning from fish have been found in Canada or Sweden.⁶

Two important scientific studies that are currently under way aim to address the effect of mercury in the food chain; these are the Seychelles study and the Faroe Islands study. Of the two studies, the double-blind study in the Seychelles has by far the best design and has the potential to yield the most valid scientific data.

The Seychelles study. Controversy exists concerning the fetal risk associated with exposure to low-dose methylmercury from maternal fish consumption.⁷ Previous studies of the effects of acute prenatal mercury exposure identified delays in achieving developmental milestones among exposed children. This led to public health concerns that prenatal low-dose exposure from fish consumption could also adversely affect the fetus.

The extensive Seychelles Child Development Study that began in 1986 is examining the association between fetal methylmercury exposure from a maternal diet high in fish and subsequent child development. The study is double blind and uses maternal hair mercury as the index of fetal exposure. No definite effects have been detected through 29 months of age in the main study.⁸ Toddlers who had prenatal exposure to methylmercury are achieving the developmental milestones of walking and talking at normal ages.⁹ The authors do say that more detailed studies in older children are needed to determine if there are adverse effects in fish-eating populations.

The Faroe Islands study. Human milk as a source of methylmercury

exposure in infants has been studied by Grandjean and others.¹⁰ In a community in the Faroe Islands, high maternal consumption of pilot whale meat and blubber and other seafood had the potential to cause a considerable transfer of neurotoxins during breast-feeding. The researchers followed 583 children from a birth cohort. Three developmental milestones that are usually reached between 5 and 12 months of age, i.e., sitting, crawling and standing, were examined. It was found that infants who reached the milestone criteria early had significantly *higher* mercury concentrations in the hair at 12 months of age. This association is contrary to what would be expected from possible neurotoxic effects of mercury. The authors point out that early milestone development is clearly associated with breast-feeding, which suggests that, if methylmercury exposure from human milk had any adverse effect on milestone development in these infants, the effect was compensated by the advantages associated with breast-feeding.

Other studies on mercury in breast milk. A study by Oskarsson and others¹¹ looked at the total and inorganic mercury content in breast milk that is related to fish consumption. In the milk, 51% of the mercury was in the inorganic form; in the blood, only 26% was present in the inorganic form. The authors found no significant correlation between the mercury levels in milk in any chemical form and the methylmercury intake. The results indicated that there was an efficient transfer of inorganic mercury from blood to milk. The researchers claimed that the exposure from amalgam fillings was the main source of mercury in milk. They reported that the exposure of the infant to mercury from breast milk ranged up to 0.3 µg/kg/day, of which approximately 50% was inorganic. The exposure was said to be one-half the tolerable daily intake for adults recommended by the World Health Organization (WHO). They concluded that efforts should be made to decrease mercury burden in fertile women.

In contrast, a study by Smith and others¹² reported that methylmercury in the U.S. population is quite low, and that it is not likely that maternal hair methylmercury levels in the range found in their study would be associated with adverse health effects in children. In addition, a study by Drexler and Schaller¹³ concluded that the additional exposure to mercury of breast-fed babies from maternal amalgam fillings is of minor importance compared to maternal fish consumption.

Thus, although a number of studies have looked at methylmercury in human breast milk, no strong evidence of toxicity has been reported. Dose-response relationships are not clearly established for developmental neurotoxicity under conditions of chronic exposure (exposure for 365 days or more) to methylmercury; shorter periods of time such as the duration of breast-feeding are even more challenging. In light of these findings it is difficult to understand the recent change in the guidelines from Health Canada.

Biotransformation of mercury. Since organic mercury presents a greater health hazard than metallic or inorganic mercury, a suggestion has been made that exposure to mercury vapour may result in metallic mercury (or perhaps ionic mercury) being transformed into highly toxic lipid soluble organomercury compounds by microorganisms in the oral cavity and gastrointestinal tract. A study by Chang and others¹⁴ evaluated the blood mercury concentrations of dentists and non-dentists; sources of mercury exposure were identified through a questionnaire at the time of sampling. Concentrations of total and inorganic blood mercury were significantly higher in dentists; however, organomercury concentrations of the two groups were not statistically different ($p \geq .05$), suggesting that biotransformation of inorganic mercury to organomercury does not occur *in vivo*. The study does not exclude the possibility that some degree of non-significant biotransformation may occur. However,

organo-mercury in blood was positively correlated with the frequency of fish consumption.

Dental Amalgam

An item of news causing some confusion recently was the announcement from the United Kingdom that pregnant women should avoid treatment involving amalgam fillings to limit the possibility of mercury reaching the fetus. Having produced this new guideline, the U.K. government then stated that it had no evidence that there was a risk from amalgam. The British Dental Association issued a press release on April 29, 1998, stating,

"The BDA accepts the Department of Health's view that:

- Pregnant women (or new mothers) should not be alarmed by this announcement. There is no evidence of harm to children whose mothers have undergone dental amalgam placement or removal during pregnancy. COT [Committee on Toxicity of Chemicals in Food, UK Consumer Products and Environment] is issuing precautionary advice pending further research.
- There is no evidence that placement or removal of amalgam during pregnancy affects the fetus. Studies show small amounts of mercury in fetuses but no adverse health effects have been shown and it is also not known whether the mercury found came from the diet or from amalgam fillings."

A publication of WHO by Mjör and Pakhomov¹⁵ recently endorsed the safety of amalgam, pointing out that the use of amalgam, especially during placement and removal, has not been shown to cause any adverse health effects. This 1997 WHO consensus statement does not suggest restrictions in the use of dental amalgam.

Mercury release is associated with the removal of an oxide layer from the surface of the amalgam alloy. Only inorganic and ionic forms of mercury are released from amalgam restorations.

Release of mercury from restorations is time-dependent and proportional to the surface area of the restorations.¹⁶ Mackert and Berglund¹⁷ have reported that the rate of unstimulated mercury release from amalgam averages 0.4 µg per amalgam surface per day; higher rates occur during the eating of some foods and during tooth-brushing. (A number of reports have assumed that meals and snacks affect mercury release to a degree similar to gum-chewing and tooth-brushing. This is, however, an erroneous assumption, which leads to serious overestimations in calculating release of mercury from restorations.^{18,19}) If we assume that the stimulated condition occurs during a period of 4 hours and that it is three times higher than the unstimulated rate, it can be calculated that the 4-hour stimulated release during the day would be:

$$\begin{aligned} 0.4 \mu\text{g Hg/day} \div 24 \text{ hours} &= \\ 0.0167 \times 4 &= 0.067 \times 3 = \\ 0.2 \mu\text{g/day} \end{aligned}$$

The unstimulated rate for 20 hours would be:

$$0.4 \mu\text{g Hg/day} \div 24 \text{ hours} \times 20 = 0.334 \mu\text{g Hg/day.}$$

The combined 24-hour stimulated and unstimulated rate would thus be:

$$0.2 \mu\text{g Hg/day} + 3.34 \mu\text{g Hg/day} = 0.534 \mu\text{g Hg/day}$$

Many researchers studying the release of mercury from amalgam have made use of a Jerome 401 instrument for sampling mercury in air. It takes the instrument 40 seconds to aspirate 500 mL of air; this amount of air (500 mL) is typical for an ordinary inhalation into the lungs, but the lungs inhale that much air in just 2.5 seconds. The mercury vapour taken in by the instrument in 40 seconds compared with the 2.5 seconds needed by the lungs produces a mercury-in-air value ($40 \div 2.5$) that is 16 times too high. Mackert and Berglund¹⁷ point out that several publications misinterpret mercury in air by a factor of 16; when used to make further calculations, these incorrect values compound inaccuracy.

Berglund¹⁸ developed a model based upon available literature that estimates the total mercury released from amalgam restorations. About 25% is released as vapour from the saliva-covered amalgam; about half of this 25% is exhaled and the other half is inhaled (12.5%), and of this latter amount 80% is absorbed through the lungs. Thus, only about 10% of mercury vapour released is absorbed (i.e., 80% of 12.5%). It is further estimated that the other 75% of mercury vapour is dissolved in saliva, swallowed and converted to the ionic form. Only about 5.25% of this ionic mercury ends up being absorbed from the gastrointestinal tract (7% of 75%). Thus only 15.25% (10% + 5.25%) of the total mercury given off from dental amalgam is absorbed; most inorganic mercury released from amalgam is excreted.

WHO standards for occupational exposure to inorganic mercury are currently 50 µg/m³ in air and 50 µg/g creatinine in urine.²⁰ The mean total mercury level in urine for 1,073 male subjects with a mean of 8.2 amalgam restorations has been reported as 3.1 µg/L.²¹

WHO's maximum acceptable daily intake (ADI) for mercury is 40 µg/day. An individual can be exposed to 44 µg/day of organic mercury in food, of which about 90% is absorbed,²² and still keep within the limit of 40 µg/day:

$$44 \mu\text{g/day} \div 100 \times 90 = 39.6 \mu\text{g/day}$$

An individual can be exposed to 262 µg/day of inorganic mercury from amalgam fillings with only 15.25% absorption and be within the same limit of 40 µg/day:

$$262 \mu\text{g/day} \div 100 \times 15.25 = 39.95 \mu\text{g/day}$$

Assuming a combined stimulated and unstimulated release of 0.535 µg/day per amalgam surface, this 262 µg/day of mercury vapour and ionic mercury given off from amalgam fillings would be equivalent to the mercury released from 490 amalgam surfaces. How many patients do you know who have 490 amalgam surfaces?

A woman weighing 54 kg under the old Health Canada maximum exposure limit of 0.47 $\mu\text{g/kg/day}$ would be permitted to be exposed to 25.38 $\mu\text{g/day}$ Hg. Assuming no mercury being contributed from food, this 54-kg woman would have to have 47 amalgam surfaces (assuming an average mercury release per surface of 0.534 $\mu\text{g/day}$) to reach the maximum level of mercury permitted. With the new lower Health Canada maximum exposure limit, the number of amalgam surfaces would be reduced to 20, again assuming no mercury intake from other sources such as food; this would be equal to an absorption of 1.6 $\mu\text{gHg/day}$. In other words, with the new Canadian exposure limit of 0.2 $\mu\text{gHg/kg/day}$, a 54-kg woman would be permitted to be exposed to:

$$54 \text{ kg} \times 0.2 \mu\text{g/kg/day} = 10.8 \mu\text{g Hg/day}$$

The resultant absorbed dose differs greatly with the form of mercury. If all of the mercury is food-related, then the absorbed dose would be 90% of 10.8, i.e., 9.7 μg . Alternatively, if the mercury is all contributed from dental amalgam fillings, then the absorbed dose would be

$$10.8 \mu\text{g Hg} \div 15.25\% = 1.65 \mu\text{g Hg/day}$$

Thus, the uptake of food-related organic mercury is *six times* higher than the uptake of mercury from amalgam; moreover, food-related mercury is significantly more toxic. The constantly repeated statement that most mercury is derived from amalgam fillings is puzzling.

Exposure and Absorption

The science of toxicity is complex. However, the absorbed dosage is by far the most important critical factor in determining if a substance is an acute or chronic toxicant or if it has no toxic effect at all. As demonstrated above, exposure to organic mercury from food results in an absorption six times greater than the same amount of inorganic or ionic mercury. The ability to be absorbed is an essential prerequisite for systematic toxicity to occur. The lipid soluble organic mercury is readily

absorbed from the gastrointestinal tract, while inorganic ionic mercury is only very sparingly absorbed.

Confusion between exposure and absorption for the various forms of mercury and the overestimation of mercury vapour using the Jerome instrument are two of many areas of misinformation that have confused facts relating to dental amalgam. Many studies suffer from a limited selection or choice of data, the ignoring of confounding variables or the misclassification of data. The resulting misinformation has been propagated and sensationalized by the media and by those with vested interests. Many well-meaning environmental activists subscribe to these scare stories that are often based on poorly designed experiments and epidemiological surveys.²³ We are faced with a constant stream of half-truths and anti-chemical alarms that ignore and undermine basic scientific principals.

A major concern with neurobehavioural testing has to be the danger of measuring effects that are due to an activity or substance other than the one being evaluated. At least 750 toxicants have the potential to cause neurotoxic effects in humans after a short-term or long-term exposure or latent period.²⁴ It is too simplistic to lay blame on any one toxic element or compound in the absence of scientific proof.

Ongoing Research

A longitudinal, randomized, prospective clinical trial in Portugal involves placement of amalgam and composite restorations in a group of 500 children aged 8 to 10 years.²¹ The test population selected had little or no exposure to mercury combined with a relatively high rate of caries. Supported by the National Institute of Dental and Craniofacial Research (NIDR), this study may finally provide solid data to confirm or disprove the potential for subtle and long-term effects from dental amalgam.

Another study initiated by the NIDR, in 1992, is the so-called Ranch Hand study, based on U.S.

Air Force personnel who served in Vietnam from 1962 to 1971. The study was originally designed to evaluate the health effects attributable to exposure to Agent Orange. The study design had a matching comparison group of non-exposed individuals. The database of these individuals contains comprehensive health data such as exposure to heavy metals and clinical measurements evaluating the central nervous and renal systems. The database also contains full dental records, including the type of restorations. This all-male (age 40 to 78 years) 1,127-man cohort cannot be said to represent a cross-section of the general population. Additionally, the design of the study limits its usefulness, because it will not be possible to infer cause and effect based simply on association. However, the database should be able to provide some useful information. Thus far, data indicate that each 10-fold increase in amalgam surfaces is associated with an increase of 1 $\mu\text{g/L}$ of mercury in urine.²⁵ It is hoped that further data studying the possible linkages between mercury levels and health outcomes will become available as the study proceeds.

Conclusions

Recent announcements in Canada and the United Kingdom raise the question, Should governments be developing limits and issuing precautionary advice for exposure to mercury from food or dental amalgam in the absence of new, definitive scientific data? Do such announcements themselves create unease and stress that can affect the health of the population? The public should not be misled about the difference between exposure to mercury and the absorbed dose of mercury, or about the different chemical forms in which it exists. When the public see an item reported in the media they assume that it is true. If governments change position statements or guidelines regarding health and safety, the public assume that the situation has become worse. That assumption holds even if, as in the case of the

British government and dental amalgam, the new guidelines are introduced with the qualifying statement that there is no evidence on the health risk.

According to some people who view dental amalgam as causing a variety of health problems, no level of mercury is acceptable in the human body. The concept that an actual tolerance may exist for low levels of mercury in the human body can, however, be rationalized. The prevalence of naturally occurring mercury in the Earth's crust, coupled with the relative ease with which it can be chemically modified, transported and exchanged among land, aquatic and air environments, suggests that living organisms have been in contact with mercury and mercury compounds throughout the long evolution of biological systems leading up to human development.^{26,27} Given the epidemiological evidence we have, it seems likely that humans may have evolved with a threshold level for mercury below which there is no response or observable adverse health effects. ■

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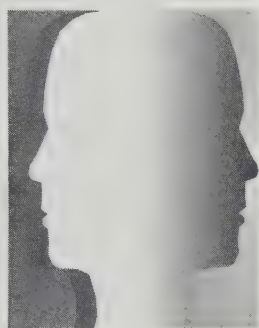
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DEBATE



The TMD Controversies Continue

Burton H. Goldstein, DMD, MS

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Although we should be weary of entrenched positions on temporomandibular disorders (TMD), the recent exchange of opinion papers^{1,2} in the CDA *Journal* merits additional comment that may serve the profession.

What to believe? Who to believe? It is, after all, a matter of beliefs. Belief in science and/or experience, modified by our professional education and knowledge, and by the scepticism — even cynicism — permeating our society. When science corroborates our experiences, there is no controversy. When science cannot provide adequate and thorough answers to our questions, or disproves our experiences, controversy may erupt. Advances in science cannot be denied, but they may be appropriately questioned. Can a scientific paper be wrong? Of course it can. Science consists of critical thinking, analysis of research, peer review, and the reproduction of results before making conclusions. There is copious, valid scientific research on TMD despite the denials. Clinical belief systems with little or no sci-

entific basis should not influence beliefs in science that are integral to dentistry and health care.

There is no acknowledged TMD or temporomandibular joint (TMJ) specialty in any recognized health profession. In Canada, oral medicine (recently revamped into oral medicine and oral pathology) is recognized as the specialty of dentistry having expertise in the diagnosis and nonsurgical management of orofacial pain (and TMD), while oral and maxillofacial surgery is the recognized specialty for its surgical management. All dentists possess some training in TMD, with individual practitioners having various levels of interest and involvement in these conditions. A wide variety of continuing education courses on TMD are available to dentists; however, these short courses are notoriously variable and do not confer specialty status or expertise.

The "practising dentist-academic dentist" dichotomy is a semi-artificial construct that should be laid to rest. As a former full-time "academic" and present part-time dental school faculty member and full-time "practitioner," I am grateful to

my academic colleagues and students who all contribute to and play a role in my practice. We must take advantage of the scientific advances of our research-oriented colleagues in both basic and clinical sciences which allow appropriate applications to patient care. Our profession can accommodate those who deny science, but we ought not to tolerate unfounded and disproved methods of care that do not help and may even harm our patients and defraud society. This is an essential subtext in the denial of the current science-based understanding of TMD, one which the true believer may not be conscious of.

All dentists concerned with TMD should read the recently published paper by Greene and others on TMD and science.³ This analysis and plea for reason comes from "academics," many of whom are also "practitioners." We should recognize that there is an important role to be played by our colleagues who are charged with providing us with clear thinking and a scientific basis for clinical concepts. Rather than divide dentists, research can provide a

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foundation upon which to question and act. The scientific method applied to humans is not as simple as doing a procedure and touting good results (or rationalizing poor results). Science mandates critical thinking and studying to determine if the results are linked to the treatments. Errors in logic and a failure to understand science have been identified as major factors in unscientific beliefs. These problems are being addressed at the University of British Columbia's faculty of dentistry, which is offering a course in critical thinking.⁴

The difficulties in planning, carrying out, and funding good scientific research, both clinical and basic, should elicit respect and gratitude from practitioners not scepticism and denial. A recent Medline review of papers on TMD and TMJ published in the past 10 years produced over 3,000 citations in the peer-reviewed literature; a search on the subject of chronic pain produced a similar

number. Valid TMD research has revolutionized our knowledge and benefited our patients. We should be proud of our academic colleagues for spearheading these developments. The scientific basis for the shift away from dental-mechanical concepts is becoming overwhelming.

Lastly, I would like to comment on the theme of paranoia. A common refrain heard in dubious dental practice is the claim of persecution by organized dentistry. This complaint helps explain the development of organizations promoting limited concepts rather than the advancement of the profession. Claims of "rigged" conferences, controlled refereed journals that prevent publication of valid research, and political manoeuvring to discourage or discredit dissent does us all a disservice. ■

Dr. Goldstein is a clinical associate professor, faculty of dentistry,

University of British Columbia. He is a certified specialist in oral and maxillofacial surgery and in oral medicine, and maintains a private practice in Vancouver, B.C.

The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

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CLINICAL PRACTICE



Bilateral Dentigerous Cysts — Report of an Unusual Case and Review of the Literature

K. S.-C. Ko, DDS

D.G. Dover, DDS, MRCD(C)

R.C.K. Jordan, DDS, M.Sc., PhD, FRCD(C)

ABSTRACT

Dentigerous cysts are the most common developmental cysts of the jaws, most frequently associated with impacted mandibular third molar teeth. Bilateral dentigerous cysts are rare and occur typically in association with a developmental syndrome. The reported occurrence of bilateral dentigerous cysts in the absence of a syndrome is rare and, to date, only 11 cases have been described. Here, we report a case of bilateral nonsyndromic, dentigerous cysts and review the literature for this unusual finding.

MeSH Key Words: case report; dentigerous cyst/pathology; mandibular diseases/pathology.

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This article has been peer reviewed.

Introduction

A dentigerous cyst is an epithelial-lined developmental cavity that encloses the crown of an unerupted tooth at the cemento-enamel junction. Dentigerous cysts are the second most common odontogenic cysts after radicular cysts, accounting for approximately 24% of all true cysts in the jaws.¹ Their frequency in the general population has been estimated at 1.44 cyst for every 100 unerupted teeth.² The cyst arises from the separation of the follicle from the crown of an unerupted tooth, and although it may involve any tooth, the mandibular third molars are the most commonly affected.

Dentigerous cysts are frequently discovered when radiographs are taken to investigate a failure of tooth eruption, a missing tooth or malalignment. There is usually no pain or discomfort associated with the cyst unless it becomes second-

arily infected. Radiographs show a unilocular, radiolucent lesion characterized by well-defined sclerotic margins and associated with the crown of an unerupted tooth. While a normal follicular space is 3 to 4 mm, a dentigerous cyst can be suspected when the space is more than 5 mm.³

Most dentigerous cysts are solitary. Bilateral and multiple cysts are usually found in association with a number of syndromes including cleidocranial dysplasia and Maroteaux-Lamy syndrome.⁴ In the absence of these syndromes, bilateral dentigerous cysts associated with the mandibular third molars are rare. To date, there have been only 11 reported cases in the literature (Table I).⁵⁻¹⁵ Here, we report the unusual occurrence of nonsyndromic bilateral dentigerous cysts associated with mandibular third molars.

Case Report

A 42-year-old Caucasian man was referred to the department of dentistry of the Sunnybrook Health Science Centre by an outside emergency dental service for the evaluation of an asymptomatic, cystic lesion in the right mandible. Intraoral examination revealed an extensively restored dentition and clinically absent third molar teeth. No extraoral swellings or tenderness in relation to the mandibular third molars was noted. The patient's medical history was nonsignificant except for a case of bronchitis and chronic fatigue. There were no associated syndromes present.

Radiographic Findings

A panoramic radiograph showed absent upper third molars. Bilateral, unilocular well-defined corticated radiolucencies surrounding both unerupted mandibular molars were identified. The anterior border of both radi-

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Fig. 1: Preoperative panoramic radiograph showing bilateral well-defined radiolucencies involving both unerupted mandibular third molar teeth.

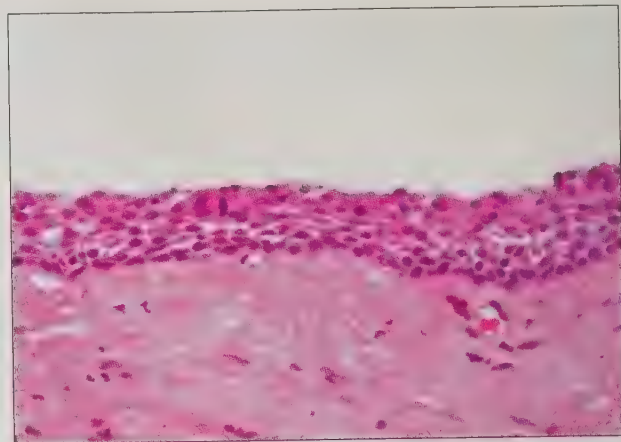


Fig. 2: Photomicrograph showing cyst wall composed of fibrous tissue and lined by nonkeratinised stratified squamous epithelium. (H & E X 40)

olucencies appeared to involve the distal root of the second molar (Fig. 1). Both third molars were grossly displaced to the inferior border of the mandible.

Treatment

The clinical diagnosis was bilateral dentigerous cysts. Under general anesthesia, the buccal flaps were raised and the cysts enucleated together with the associated third molar teeth. Healing was uneventful, and one week after the operation, the surgical sites showed good healing. There was partial paresthesia on the left side affecting the mental nerve distribution of the inferior alveolar nerve, but after three months, there had been complete healing. There was also no evidence of recurrence of the cysts.

Pathology

The submitted specimen consisted of two sacs of soft tissue, the largest measuring 30 x 7 x 5 mm. Microscopic sections of both specimens were similar, showing cyst walls composed of fibrous tissue and lined by stratified squamous, non-keratinized epithelium with Rushton bodies (Fig. 2).

Discussion

Although dentigerous cysts are common developmental cysts, reported bilateral dentigerous cysts are extremely rare. Bilateral or multiple dentigerous cysts are usually associated with the Maroteaux-Lamy (mucopolysaccharidosis, type VI) syndrome¹⁶ and cleidocranial dysplasia.¹⁷ Both are develop-

mental conditions that are detected in young individuals with stigmata of the syndromes.

Maroteaux-Lamy syndrome is one of the mucopolysaccharidoses (MPS), a group of diseases resulting from a genetic defect in the degradation of specific mucopolysaccharides. With this syndrome, there is a deficiency of N-acetyl-4-sulphatase that results in impaired degradation of dermatan sulphate, which accumulates in tissues and is excreted in the urine. Dental features include unerupted dentition, dentigerous cysts, malocclusions, condylar defects, and gingival hyperplasia.¹⁶ Cleidocranial dysplasia is an autosomal dominantly inherited disorder that results in a partial or complete absence of clavicles, short stature, frontal and parietal bossing, maxillary micrognathia, prolonged retention of the primary dentition, delayed eruption of the permanent dentition, and unerupted supernumerary teeth.¹⁷ Multiple dentigerous cyst formation occurs in both conditions and can develop at any site in the upper or lower jaws.

Bilateral dentigerous cysts are rare in the absence of an underlying syndrome or systemic disease. An extensive search of the English language literature has identified only the 11 cases reported in Table 1. Although this finding may reflect the true rarity of the condition, it is conceivable that bilateral dentigerous cysts are either under-recognized or under-reported.

The age range for the reported cases varies widely, from 5 to 57 years of age. Four of the cysts occurred in children under the age of 12. All but three cases^{6,12,13} were identified at ages corresponding to the normal eruption times of the affected teeth. As with our case, these three cases occurred in asymptomatic individuals, which accounts for the delayed diagnosis. All but two of the 11 cases^{5,9} have been associated with mandibular molar teeth, with five of these associated with the third molar teeth.^{6,10-13} There have been no reported cases of nonsyndromic, bilateral dentigerous cysts occurring in all four dental quadrants.

Since cysts can attain considerable size with minimal or no symptoms, early detection and removal of the cysts is important to reduce morbidity. Moreover, all but one¹¹ of the reported cases, including ours, presented without pain. And, all but one were discovered during investigation of asymptomatic slow-growing swellings.¹¹

It is therefore important to perform radiographic examination of all unerupted teeth. While bite-wing and periapical radiography is typically performed in the routine examination of patients with a healthy dentition, this series of radiographs may occasionally fail to delineate the full extent of a lesion if present. A panoramic radiograph supplemented with skull series or more advanced imaging such as tomography may permit a better delineation of the extent of the

Table 1
Summary of Previously Reported Cases of Nonsyndromic Bilateral Dentigerous Cysts in English Language Literature

Authors	Year	Sex	Race	Age (yrs.)	Location	Treatment
Sands and Tocchio ⁵	1998	F	N/A	3	Md. central incisors and first molars	Enucleation
Banderas and others ⁶	1996	M	C	38	Md. third molars	Enucleation
O'Neil and others ⁷	1989	M	Bl	5	Md. first molars	Enucleation
Eidinger ⁸	1989	M	C	15	Md. first molars	Enucleation
McDonnell ⁹	1988	M	N/A	15	Md. second premolar and second molar teeth	Enucleation
Crinzi ¹⁰	1982	F	Bl	15	Md. third molars	Enucleation
Swerdloff and others ¹¹	1980	F	C	7	Md. first molars	Enucleation
Burton and others ¹²	1980	F	Bl	57	Md. third molars	Enucleation
Callaghan ¹³	1973	M	C	38	Md. third molars	Enucleation
Stanback ¹⁴	1970	M	N/A	9	Md. first molars	Enucleation
Myers ¹⁵	1943	F	N/A	19	Md. third molars	Enucleation

N/A= not available

C = Caucasian

Bl = Black

M = male

F = female

Md. = mandibular

lesion and its relationship to adjacent anatomical structures. ■

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Reprint requests to: Dr. Richard Jordan, H-126, Sunnybrook Health Sciences Centre, 2075 Bayview Ave., Toronto ON M4N 3M5.

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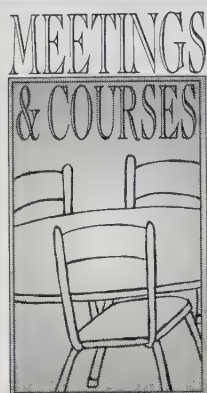
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INTERNATIONAL



March 6-13

15e Forum de l'Association internationale francophone pour la formation continue en odontologie (AIFFCO), en Guadeloupe, avec la collaboration de la Faculté de médecine dentaire de l'Université Laval, Québec. Contact: Dr. Christian Bernard, Faculté de médecine dentaire, Université Laval, Québec. Tel.: (418) 656-5018; fax: (418) 656-2720; or e-mail: ruth.turcotte@fmd.ulaval.ca

March 20-27

43rd International Alpine Dental Conference in Courchevel, France. Contact Marie-Ange Vitry, International Dental Foundation, 53 Sloane St., London SW1X 9SW, U.K. Tel.: 44 (0) 171 235-0788; or fax: 44 (0) 171 235-0767.

April 21-24

Irish Dental Association Annual Scientific Conference in Cork City, Ireland. Contact Margaret Ferguson, Irish Dental Association, 10 Richview Office Park, Clonskeagh Road, Dublin 14, Ireland. Tel.: 00353 1 2830499; or fax: 00353 1 2830515.

June 21-26

6th International Dental Congress of the Turkish Dental Association in conjunction with the World Dental Federation (FDI) in Istanbul, Turkey. For information visit the Web site at www.dentalfo-

rum.viptourism.com.tr or call: (0-312) 435 93 94; fax: (0-312) 430 29 59; or e-mail: dentalforum@viptourism.com.tr

June 23-25

Stomatology '99 — International Dental Exhibition and Conference in St. Petersburg, Russia. Contact the International Trade and Exhibitions Group, Health Care Division, Byron House, 112A Shirland Rd., London W9 2EQ, U.K. Tel.: +44 171 286 9720; or fax: +44 171 266 1126; or by e-mail: healthcare@ite-exhibitions.com

CANADA



February 12, 1999

16e Journée scientifique de la Faculté de médecine dentaire de l'Université Laval in Quebec. Contact Mr. Charles Garon, Formation continue, Pavillon Louis-Jacques-Casault, Université Laval, Québec G1K 7P4. Tel.: (418) 656-3202; or toll-free: 1-800-561-0478, ext. 3202; or fax: (418) 656-5538; or by e-mail: charles.garon@dgfc.ulaval.ca

March 10

Symposium on Orofacial Pain — From Basic Science To Clinical Management at the Simon Fraser University, in Vancouver, BC. Contact Lucille Gendron by fax: (514) 343-2233; or e-mail: gendrol@medent.umontreal.ca

March 17-20

Western Canada Dental Society Curling Bonspiel and Seminar in Edmonton, Alta. Contact Dr. Rick Brisbane, 304-8225 105 St., Edmonton AB T6E 4H2. Tel.: (403) 439-6037; or fax: (403) 439-0145.

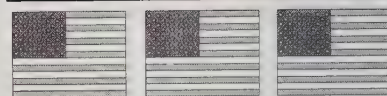
April 31 and May 1

Meeting of the Southern Ontario Surgical Orthodontic Study Group in Windsor, Ont. Contact Dr. Jeff Berger by tel.: (519) 258-2632; by fax: (613) 258-2637; or e-mail: jberger@mnsi.net

July 15-18

Canadian Psychological Association to host AIDS Impact 1999 in Ottawa, Ont. Contact AIDS Impact 1999 Secretariat, 151 Slater St., Suite 205, Ottawa ON K1P 5H3. Tel.: (613) 237-2144; or fax: (613) 825-0530. Web site: www.aidsimpact.com

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February 3-6, 1999

6th Annual Conference and Exhibition Of the Academy Of Laser Dentistry in Palm Springs, Calif. Contact the Academy Of Laser Dentistry, 10435 Vernon Ave., Huntington Woods, MI 48070-1526. Tel.: (248) 548-7171; fax: (248) 548-7174; or e-mail: acohen@laserdentistry.org

February 5-13

Pennsylvania Academy of General Dentistry's 9th Annual Caribbean Winter Seminar in St. Martin/St. Maarten. Contact Dr. Tom Howley. Tel.: (215) 699-8751; fax: (215) 699-5618; or e-mail: tahowley@aol.com

February 11-13

Miami Winter Meeting and Dental Expo in Miami, Fla. Contact the East Coast District Dental Society, 420 S. Dixie Hwy, Suite 2E, Coral Gables, FL 33146-2271. Tel.: 1-800-344-5660; (305) 667-3647; or e-mail: ecdss@ecdental.org

February 26-28

Barbados Dental Association's 11th Annual Mid-Winter Convention, in Barbados, W.I. Contact Mrs. Fay Mack, Barbados Dental Association, 17 Pine Rd., Belleville, St. Michael, Barbados, W.I. Tel.: (246) 228-6488; or fax: (246) 228-6488. In Canada, contact Lynne Brandon, tel.: (519) 657-4306 (evenings); or fax: (519) 472-9120; or Mr. Jerry Sheppard tel.: (519) 434-1647 (days); or fax: (519) 434-4936.

March 4-6

14th Annual Meeting of the Academy of Osseointegration in Palm Springs, Calif. Contact the Academy Headquarters, 401 North Michigan Ave., Chicago IL 60611-4267. Tel.: (312) 321-5169; or fax: (312) 321-5150; or by e-mail: academy@osseo.org

April 23-26

Minnesota Dental Association's Star of the North Meeting in Saint Paul, Minn. Contact the Star of the North Meeting, 2236 Marshall Ave., Saint Paul MI 55104. Tel.: (651) 646-7454; or fax: (651) 646-8246; or by e-mail: mndental@mn.uswest.net

DENTAL MEETINGS



February 18-20

Pacific Dental Conference At Vancouver in Vancouver, B.C. Contact Ms. Marilynne Webster. Tel.:

(604)714-5303; fax: (604) 736-3645; or Web site: www.pdconf.com

March 26-27

CDA Board Of Governors Interim Meeting in Ottawa, Ont. Contact Ms. Suzanne Burton. Tel.: (613) 523-1770, ext. 2201; or 1-800-267-6354.

April 29 - May 1

Ontario Dental Association 132nd Annual Spring Meeting in Toronto, Ont. Contact Ms. Diana Thorneycroft. Tel.: (416) 922-4162, ext. 346; fax: (416) 922-9005; or e-mail: pdasm@oda.on.ca

May 25-30

93rd Annual General Meeting of the Alberta Dental Association in Jasper, Alta. Contact Dr. E.W. McIntyre. Tel.: (403) 484-1336; or fax: (403) 489-4930.

May 27-29

Prince Edward Island Dental Association Annual Meeting in Woodstock, P.E.I. Tel./Fax: (902) 892-4470.

May 29 - June 2

28e Congrès annuel de l'Ordre des dentistes du Québec in Mon-

treal, Que. Contact Mrs. Nicole Pagé. Tel.: (514) 875-8511; or fax: (514) 393-9248.

June 4-5

New Brunswick Dental Society Annual Meeting in Saint John, N.B. Contact Mrs. Barb Wishart. Tel.: (506) 452-8575; or fax: (506) 452-1872.

June 19-20

Nova Scotia Dental Association Annual Meeting in Pictou, N.S. Contact Mr. Steve Jennex. Tel.: (902) 420-0088; or fax: (902) 423-6537.

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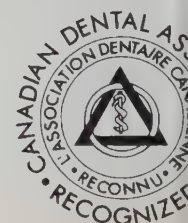
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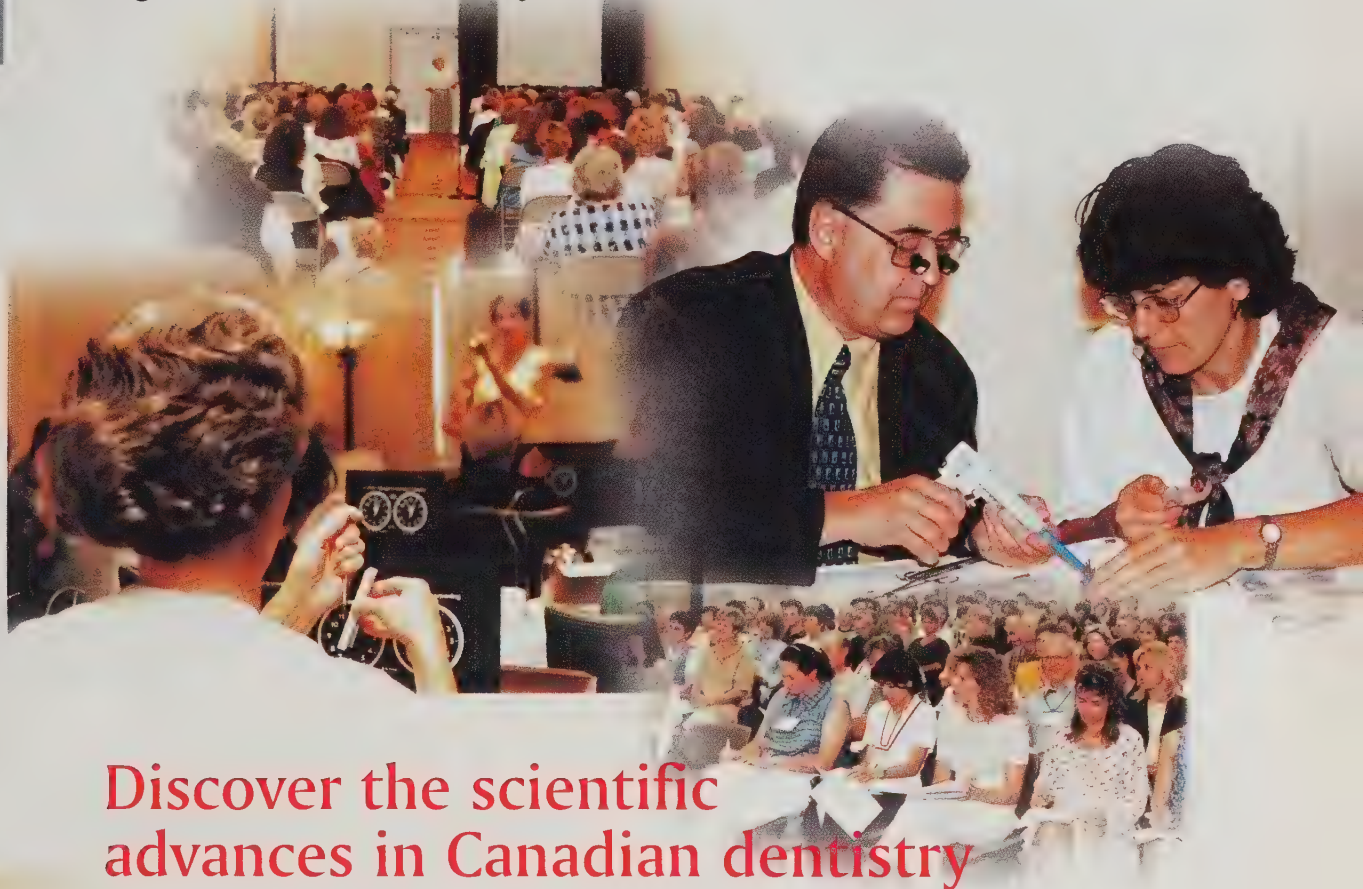
Journal

January
1999
Vol. 65
No. 1



CDA Convention Halifax, Nova Scotia

August 5-8, 1999 Hosted by the Nova Scotia Dental Association



Discover the scientific advances in Canadian dentistry

The 1999 CDA Convention, hosted by the Nova Scotia Dental Association, is your opportunity to learn about the latest and greatest scientific breakthroughs in Canadian dentistry. The CDA Convention, in the World Trade and Convention Centre located on George Street, allows you to stay on top of scientific developments in our profession. This year's scientific program will cover topics ranging from clinical issues to practice management and will feature 28 speakers, including Jeffrey Sherman, who will speak on the subject of oral surgery; Michael Suzuki, whose topic will be esthetics; and Carol-Lee Heffernan, whose inspiring motivational talk is not to be missed. Take in one of the many table clinics and try out the newest dental equipment available today. We look forward to seeing you at the Convention.

Exhibitors

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Social Program

• Organized Tours • Evening Social Events • Children's Program

For more information contact CDA Convention at 1-800-267-6354 or (613) 523-1770 Fax: (613) 523-3062 Web site: www.cda-adc.ca
For hotel reservations, please call 1-800-465-5355.

When booking your flight call Canadian Airlines directly at 1-800-665-5554 and mention the code 01850 to obtain convention rates.

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Offices & Practices

ALBERTA - Calgary: For sale - 1/3 interest in group practice of three general dentists. Partner returning to graduate school. Well-established practice in the north-west, recently relocated into a new facility. Growing patient base and great net income. Excellent opportunity. Call in evenings, (403) 241-3499. D401

ALBERTA - Grande Prairie area: Excellent opportunity to purchase a successful, established dental practice. Owner wishes to return to university. Willing to provide the time and assistance for a smooth transition. This is an opportunity worth looking into. For detailed information, including photos, please reply by faxing your name and phone number to (403) 988-6843. D391

ALBERTA - Southern: Active dental practice for sale. Three operatories plus hygiene room. Ideal location with well-established clientele. Will assist in transition. Send all replies to: CDA Classified Box # 2766. D396

ALBERTA - West Central: Three-operator, computerized, well-established solo practice for sale due to illness. 1,100 sq. ft. Gross approximately \$400,000. Very low overhead. Quick transaction appreciated. Call (403) 782-2637. D398

BRITISH COLUMBIA: Superior practice for sale in beautiful British Columbia. Generating \$400,000 net. If you like the outdoors this is for you. Could support two new graduates. Tel. (250) 242-2396 (after 7 pm). D400

BRITISH COLUMBIA - Penticton: Busy family practice for sale - located in strip mall in Penticton. Existing dentist would like to stay on as partner or part-time associate. Fax (250) 493-1986 or tel. (250) 493-0020. D353

BRITISH COLUMBIA - Vancouver: Urban sophisticate wanted for downtown

Vancouver, British Columbia waterfront dental office. We are a professionally managed, solo-group format of seven dentists in three separate practice locations in the Vancouver downtown core. This location is a two-dentist, three-chair dental office with all the hi-tech goodies, yet highly efficient and profitable. This is a very busy "state-of-the-art" dental practice in a ground-floor, retail-style setting looking out at the water through 10 ft. glass windows - very relaxing. This is a purchase or short-term associate with a guaranteed buy-in at preset below-market price. 100% financing in place for the right dentist, but there is a catch. You must be committed to lifetime learning, excellence in clinical skills, patient oriented and be willing to either teach part time or be involved in study clubs. Female dentists are urged to consider this practice, as our flex schedule and above-average time off allow you to balance family and professional responsibilities. A second language (any language) would be an asset as would a great sense of humour and good endodontic skills. Please fax your CV with a covering letter stating your philosophy and goals to: Dr. Armstrong, Managing Doctor, Aarm Dental Group, (604) 683-5468. D331

BRITISH COLUMBIA - Okanagan: For sale, rural Okanagan practice in four-season holiday area. Only office in 15 km. radius, serving about 3,000 population. Reply to: CDA Classified Box #2754. D332

NEWFOUNDLAND - Corner Brook: Established solo family practice, 2,500 plus patient base. Sale or associateship leading to sale. Three operatories (one hygiene). Computerized with efficient recall system. High gross, low overhead situation. For further information contact: Bill Tingley, tel (800) 565-1502 NB/NS/PEI/Nfld., or (902) 835-1103 in Halifax and enquiries outside toll-free area. D394

LABRADOR - NEWFOUNDLAND: Well-established practice for sale. Three new operatories (one hygiene). Excellent staff, full-time hygienist. Computerized, panoramic X-ray. Two specialists rotate through clinic - periodontist, oral surgeon. Call Dave Harris at (902) 421-1533. D293

ONTARIO - Northwestern: Established practice for sale in northwestern Ontario. Three operatories (one hygiene), full-time hygienist, computerized, panoramic x-ray, intraoral camera. Gross over \$400,000; 2,600 active patients. Professional appraisal available. Excellent recreational facilities. Easy drive to major city. Vendor willing to assist in transition. Reply to: CDA Classified Box # 2764. D389

ONTARIO - Kingston: Ultra-modern general practice for sale. Main thoroughfare exposure. All new equipment. Two operatories plus one plumbed. Computerized intraoral camera with ceiling-mounted TVs. Excellent staff. Great potential for growth. Community is rich in culture and recreational activities. Owner pursuing graduate studies. Tel. (613) 389-2031(evgs.). D378

ONTARIO - Hamilton: General family practice grossing \$600,000+ involving restorative and preventive areas. In busy downtown professional building; two operatories and one full hygiene unit. Great staff and dentist willing to stay for transition. Please address all enquiries to: Mr. Robin Wydryk, c/o Scott & Batenchuk, 3600 Billings Court, Ste. 301, Burlington, ON L7N 3N6 or call (905) 632-5978 or fax (905) 632-9068. D386

ONTARIO - Ottawa: Dental practice for sale. Ideal for new graduate. Excellent location. Reply to: CDA Classified Box # 2763. D382

SASKATCHEWAN - Moose Jaw: Excellent opportunity. Dentist retiring from well-established, three-man practice. Willing to associate for smooth transition. Presently working a 4-day week with hygienist and therapist. Seeing 35+ new patients per month and grossed \$630,000+ in 1997. Enthusiastic and fun staff. Computerized office with five operatories in a 14-operatorspace. Ultra-modern equipment with intraoral camera, air abrasion unit, cephalometric and panoramic X-rays. Beautiful new office located in prime area of Moose Jaw, Saskatchewan. Population 35,000. Rural drawing area of 80,000. Contact: R. Tessier, DDS, tel. (306) 692-6438 or (306) 692-8221, fax (306) 692-3177, e-mail MJ241@focalpt.net D405

SASKATCHEWAN - Central: Well-established (15+ years), busy, modern, rural general practice for sale. Three operatories and a private office. Only dentist in town with a large drawing area. Opportunity to practise all types of dentistry; 1,000+ active patients, most with dental insurance. Town is close to Saskatoon and Regina. Owner retiring. Priced to sell. Reply to: CDA Classified Box # 2762. D383

Positions Available

BRITISH COLUMBIA - Central Vancouver: Very busy oral and maxillofacial surgery practice is seeking an associate/partner. New facility, excellent staff, three hospitals including trauma coverage for a nearby 447-bed, acute care facility. Please reply in confidence to: CDA Classified Box # 2757. D360

BRITISH COLUMBIA - Kelowna: Opportunity for associate with a view to purchase. Established, productive practice, great location, new equipment, computerized (Byte). Fun staff and pleasant environment. Tel. (250) 764-8509 (res.); PO Box 29104, Okanagan Mission, Kelowna, BC V1W 4A7 D304

MANITOBA - Morden: Associate or locum dentist urgently required part-or full-time. High-gross family practice averaging 80+ new patients per month. Well-established practice in a beautiful new clinic, located in small town 120 km from Winnipeg. Strong emphasis on clinical excellence and comprehensive patient care. Please call Boundary Trails

FAMILY PRACTICE Rainy River

Excellent opportunity for dentist. High-gross, well-established solo family practice in northwestern Ontario serving approximately 4,500 people. Rainy River is a community of 1,000 and is located on the Minnesota border and is close to Lake of the Woods. Wonderful environment for outdoor-oriented family or individual. The practice has experienced staff who know clients well, two operatories and up-to-date equipment. Clinic renovations for connection to new hospital have just been completed. Current dentist has returned to school.

Please forward resume: **c/o Susan Affleck, Town of Rainy River, Rainy River, ON P0W 1L0, fax (807) 852-3553, tel. (807) 852-1254, e-mail rainyrf@fort-frances.lakeheadu.ca**

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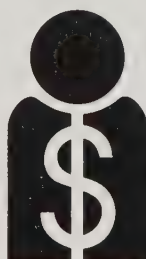
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Health and Community Services Prince Edward Island CLINICAL DENTIST

There is a position available for a clinical dentist with the Dental Division, Health and Community Services, P.E.I. This full-time, permanent position would involve the provision of clinical dental services using a team concept for eligible children aged 3-16 under the Children's Dental Care Program of P.E.I. Although the principal focus is the children's program, the dentist will also be involved in screening programs in long-term care facilities, risk-assessment screenings in schools and various other administrative and supervisory duties.

For further information contact:

**Dr. Barry Maze, Director, Dental Public Health
PO Box 2000
Charlottetown, PE C1A 7N8
Tel.: (902) 368-4915
Fax: (902) 368-4922
E-mail: dbmaze@ihis.org**

D402

Dental Centre at (204) 822-6259 or (204) 822-3448 (evgs.) or fax resume to (204) 822-5997. D388

MANITOBA - Oakbank: Part-time associate wanted for modern, rapidly growing practice. This attractive office is located 20 minutes from Winnipeg, in a rapidly growing family oriented town. Successful candidate must be highly motivated, caring, gentle and like working with children. A minimum of 2 years experience is required. Tel. (204) 989-2231, please leave message. D278

NEW BRUNSWICK - Saint John: Locum dentist required for maternity leave. Excellent opportunity for experienced dentist to work in a modern family dental practice with pleasant, competent support staff. Minimum 6 weeks, possible opportunity for long-term position. Tel. (506) 633-7045. Send resumes to: 140 J Hampton Rd., Suite 176, Rothesay, NB E2E 5Y3. D393

NORTHWEST TERRITORIES - Hay River: Canadian-certified associate required for busy, modern, well-equipped family practice. Fully qualified and experienced staff. Opportunity to travel to outlying communities. We are seeking a motivated, caring individual who works to a high standard and is prepared to make a long-term commitment. This is an ideal opportunity to generate a high income under excellent clinical conditions. Please call Dr. Joe Keates, (867) 874-6663 or fax (867) 874-2130. D363

NORTHWEST TERRITORIES - Yellowknife: Canadian licensed dentists. Full-time associate position available in Yellowknife. Modern, computerized, centrally located clinic. Travel to outlying communities necessary. Exciting opportunity. Forward resume to: PO Box 2615, Yellowknife, NT X1A 2P9 or fax (867) 873-5032. D267

NORTHWEST TERRITORIES - Yellowknife: Canadian certified dental associate required for a modern family dental practice with pleasant support staff. The clinic is located in the city of Yellowknife. Seeking a caring motivated individual interested in a long-term position. Please reply to: CDA Classified Box # 2705. D012

ONTARIO - West of Toronto: Full-time general dentist required for well-established, high-gross family dental practice to replace associate who is leaving after 7 years. Your schedule will be fully booked from day one. Our office is modern and progressive with emphasis placed on esthetic dentistry. Please fax resume to (905) 271-0031. D397

ONTARIO - Ottawa: Downtown core. Associateship available in modern, high-tech and very busy general dental clinic. Looking for responsible, patient service oriented dentist for full-time position with extended and flexible hours. Please call (613) 232-1411. D395

ONTARIO - Hamilton Mountain: Part-time associate required for progressive group practice. This position involves evening and weekend hours and will lead to full time/partnership for the right candidate. Please forward resume to: Mountain Mall Dental Office, 673 Upper James St., Unit 46, Hamilton, ON L9C 5R9 or call Shirley at (905) 387-4780. D362

ONTARIO - Sarnia: Experienced associate dentist required to work with me in a well-established, high-gross family dental practice. We are an up-to-date and progressive office with emphasis placed on esthetic dentistry. This is an outstanding opportunity for the right candidate to become a future partner/purchaser. Our office is a large, spacious facility with all modern updates and a warm and friendly long-time staff. Our practice is pursuing the esthetic end of dentistry and an associate is needed to handle routine day-to-day dentistry while gaining experience in the cosmetic field. I am looking forward to meeting someone already experienced who is interested in this long-term, interesting position. Please contact: David M. Rapaich, DDS, 230 North Vidal St., Sarnia, ON N7T 5Y3; tel. (519) 336-1270 or fax (519) 336-5107 or e-mail kingpin@ebtech.net D365

QUÉBEC: Recherche orthodontiste désirant oeuvrer en région pour une période pouvant atteindre 2 à 3 jours/semaine, où selon disponibilité. Faire parvenir votre CV à la boîte réponse de l'ADC # 2765. D390

QUEBEC - Montreal: Oral and maxillofacial surgery associate for well-established, solo, bilingual practice. Progression to buy in and role reversal anticipated for the right individual who is skilled, personable, and who considers patient care a priority. Confidential reply to: CDA Classified Box #2744. D261

SASKATCHEWAN - Moosomin: Locum dentist required for maternity leave, April 1, 1999. Well-established, busy family practice in new facility, equipped with panorex/ceph unit. Hygienist and therapist on staff. Moosomin is a progressive town located on the Trans Canada Highway, 2 hours east of Regina. Please reply to: Dr. P. Biglow-Lecomte or Marie, tel. (306) 435-3080 (days), (306) 435-2901 (evgs.) or fax resume to (306) 435-2017. D375

YUKON TERRITORY - Whitehorse: Associate required for a five-chair dental clinic. We are looking for a person committed to quality dentistry and interested in a long-term relationship. Tel. (867) 668-4618, fax (867) 667-6824. D358

BERMUDA: Wanted, left-handed locum for dental practice in Bermuda, Apr. 26 - May 25, 1999. Practice located in front yard of residence. Tel. (441) 236-5298, fax (441) 236-0666. D384

Equipment Sales & Service

WANTED: Orthodontic spot welders for ortho study club. Reply: c/o Dr. Glen Chabaylo, tel. (403) 347-8855 or fax (403) 347-2214. D399

FOR SALE: Dispersalloy and Phasealloy Amalgam, 400 mg. Pellets. Asking \$25/oz or best offer. Tel. (403) 623-2876 (after 4 pm MST), fax (403) 623-2965. D406

Miscellaneous

24th ANNUAL SPRING FLORIDA HEALTH SEMINAR: Mar. 26 - Apr. 7, 1999. Embassy Suites Hotel, Boca Raton, Florida. C.E. credits available. Registration \$350. Special hotel and auto rates available. Contact: Linda Golnick, Coordinator, 4826 Cliffside Dr., West Bloomfield, MI 48323; tel. (248) 681-0211, fax (248) 681-0315. D404

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INFORMATION PACKAGE

January 1999

This month's package contains a selection of reading materials on **periodontal disease and cardiovascular disease**. It is available to CDA members for \$5.00 plus applicable tax.

A complete list of information packages is available upon request by calling

1-800-267-6354

or can be easily accessed on the CDA Web site at

www.cda-adc.ca

Once inside our site, please log into the "CDA Members" area and click on "Resource Centre" and a list of packages can be viewed.

New Acquisitions

McDonald, F. and Ireland, A.J. *Diagnosis of the orthodontic patient*. Oxford University Press, 1998.

Freedman, George. *Esthetic dentistry*. Dental Clinics of North America, Saunders, 1998.

Ten Cate, A.R. *Oral histology: development, structure and function*. 5th ed. Mosby, 1998.

Cawson, R.A. and Odell, E.W. *Essentials of oral pathology and oral medicine*. 6th ed. Churchill Livingstone, 1998.

Mason, Rita and Bourne, Sarah. *A guide to dental radiography*. 4th ed. Oxford University Press, 1998.

MacEntee, Michael I. *The complete denture, a clinical pathway*. Quintessence, 1999.

BOARD OF GOVERNORS

NOTICE OF MEETING

Interim Meeting

The Interim Meeting of the Board of Governors of the Canadian Dental Association will be held March 26 and 27, 1999 (Friday and Saturday), at the Westin Hotel, Ottawa, commencing at 9:00 a.m.

It is brought to your attention that the meetings of the Board of Governors are open to all members of the Association.

The Board is composed of twenty-six governors with voting privileges and a chairman. Governors represent members across Canada on a 1 to 500 ratio. The Canadian Forces Dental Services and Student members are represented by one member each.

In addition, there are two non-voting members, namely the senior dental representative of Health Canada and Veterans Affairs Canada.

A complete listing of the Board of Governors follows:

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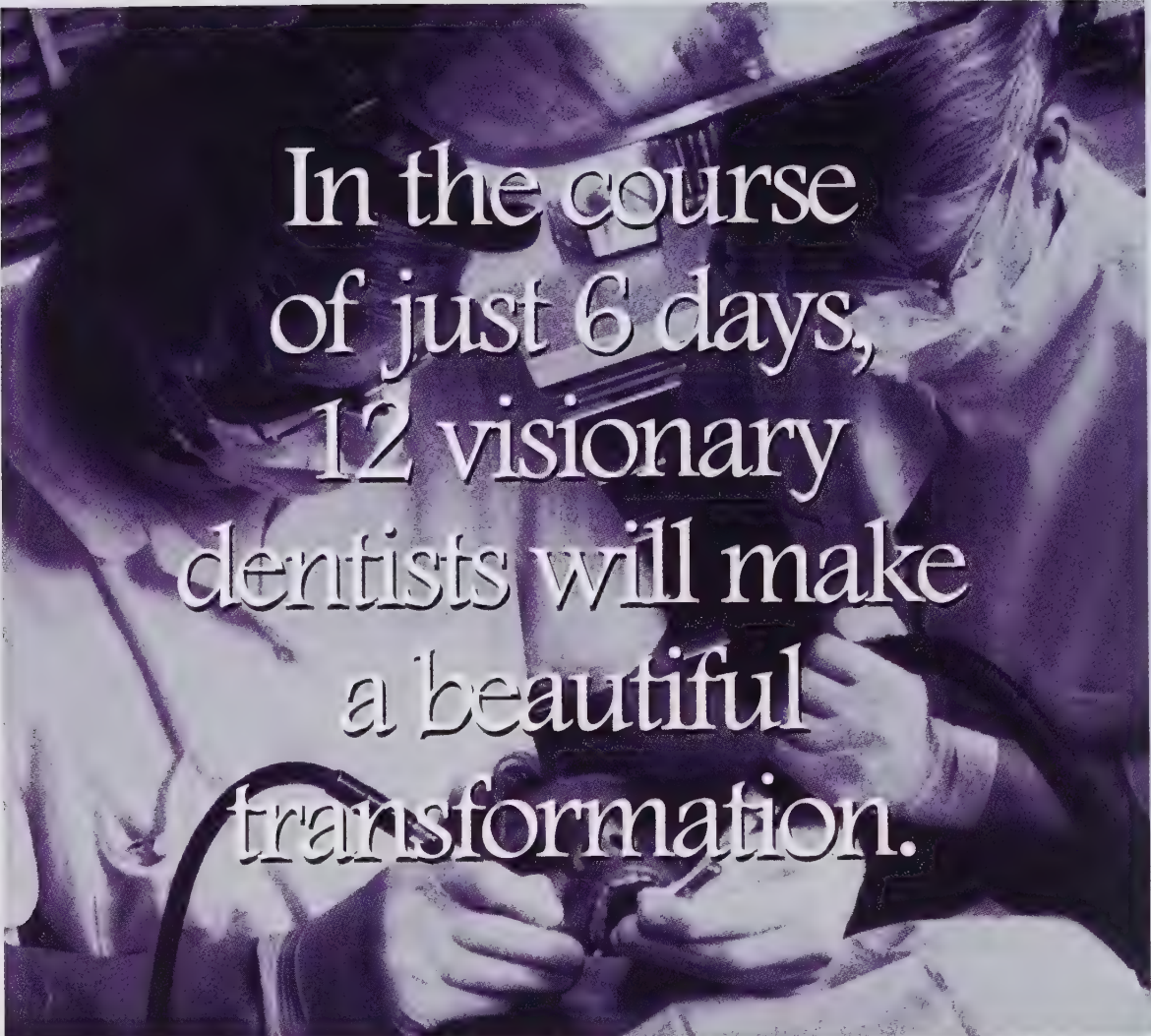
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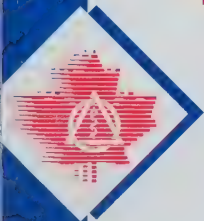
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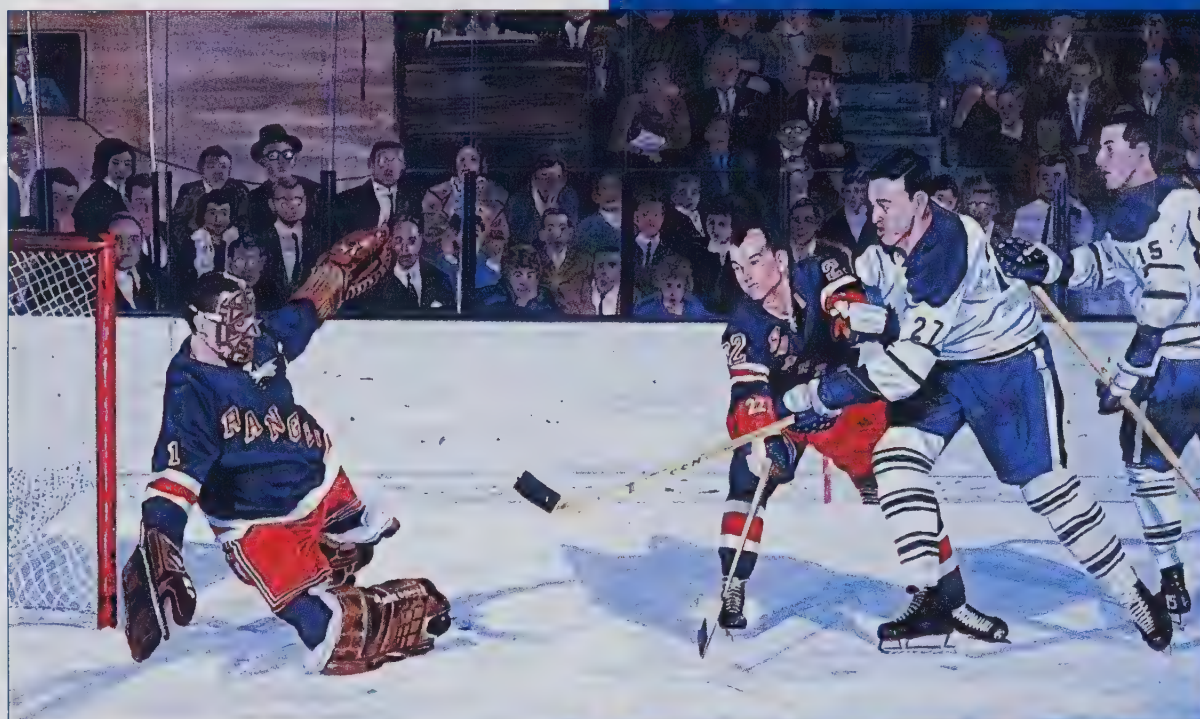
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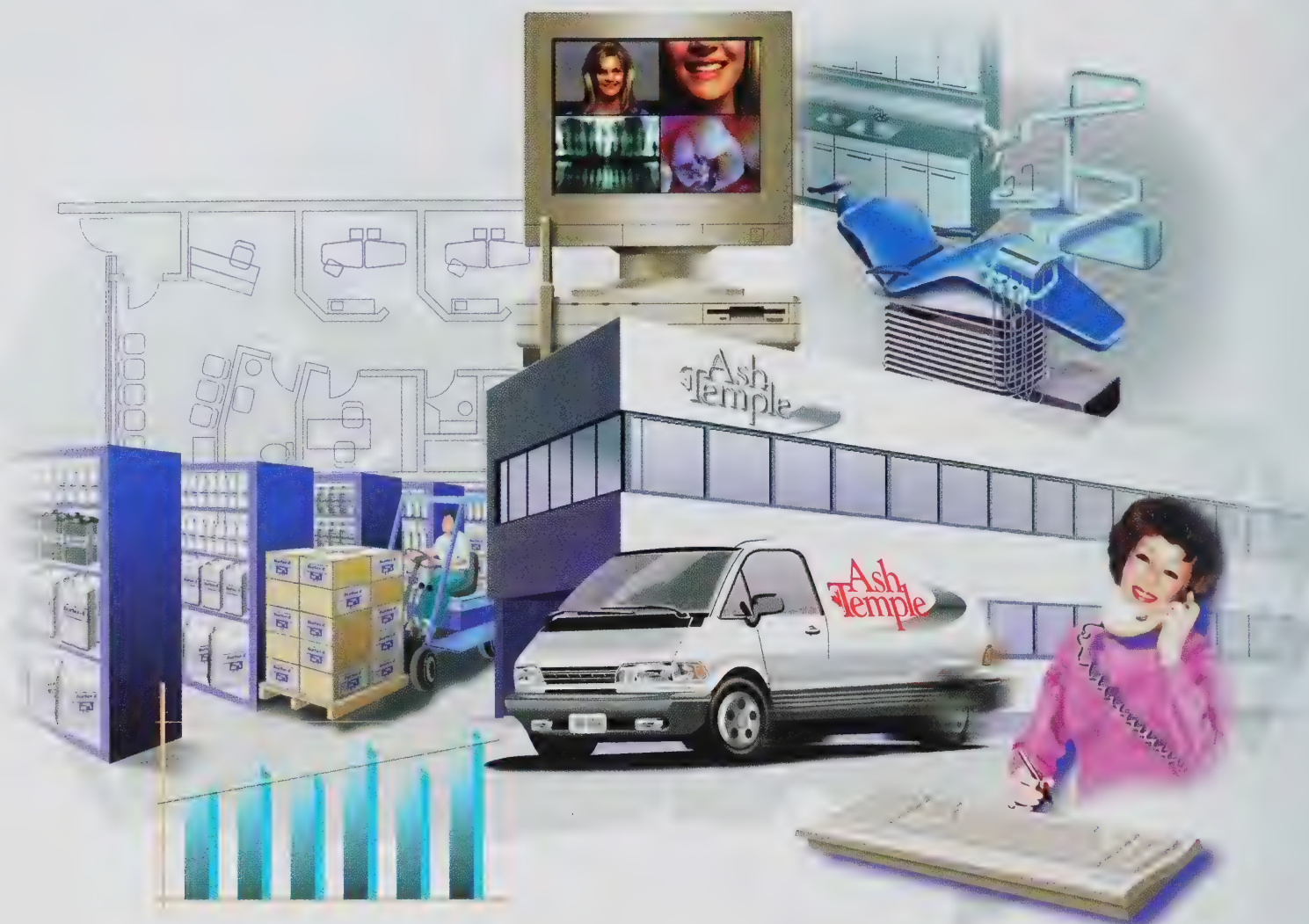
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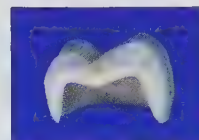
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¹ Biaxial flexural strength and indentation fracture toughness of three new dental core ceramics
Wagner WC, Chu TM; University of Michigan (JPD 1996; 76: 140-4)

Journal

Canadian Dental Association

FEBRUARY 1999
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SYSTEMS FOR SUCCESS

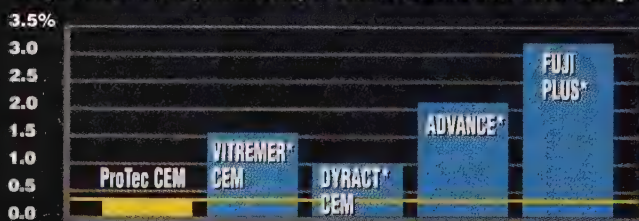
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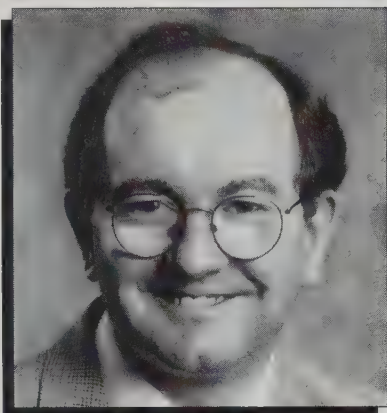
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EDITORIAL

ANTIBIOTICS AND SACRED COWS



Dr. John P. O'Keefe

Not long ago, a seemingly healthy 96-year-old woman presented to me with a toothache. I examined her and determined she needed to have an extraction. I had previously noted in the medical history that the patient had a heart murmur "picked up on medical examination three years previously." Immediately the question arose in my mind: "Do I prescribe prophylactic antibiotics in this case?"

Another dentist had extracted a tooth for this patient within the past year and had contacted the patient's physician about the necessity of prescribing prophylactic antibiotics. The physician's response was noted in the dental chart: "Give antibiotics just to be on the safe side."

When I was in dental school, my teachers impressed on me that I had to be really careful to prescribe prophylactic antibiotics in cases where there was a risk of infective endocarditis. If I made a mistake, I could kill a patient. In my early years in practice, if a patient mentioned that they had a heart murmur or if they thought they had suffered from rheumatic

fever in childhood, I would prescribe prophylactic antibiotics.

Some patients would protest that they had undergone many invasive dental procedures previously without antibiotic coverage and without untoward outcomes. These patients often made me feel like I was making a fuss for nothing. In my dimming recollection of those years, I seem to recall that a sizeable number of physicians thought us dentists were unduly worried about causing infective endocarditis.

Since I began practicing dentistry, the revisions to the American Heart Association guidelines about antibiotic prophylaxis for the prevention of infective endocarditis have been in the direction of prescribing more limited regimens of antibiotics in a more refined range of circumstances. It now seems that the whole question of prophylactic antibiotics prior to invasive dental treatment is ripe for further examination.

In this edition of the *Journal*, Dr. Joel Epstein brings to our attention two recent articles that reported limited risk of endocarditis subsequent to dental treatment. Dr. Epstein calls for a re-examination of the guidelines for prophylactic antibiotic therapy in dentistry and suggests that new guidelines should be based on "outcome studies (when available) and on evidence of safety, efficacy and, increasingly, cost effectiveness."

One of the articles that Dr. Epstein brings to our attention was published by Strom and co-authors in the *Annals of Internal Medicine* on November 15, 1998. You can read the full text of that article on the Internet (www.acponline.org/journals/annals/15nov98/endo.htm). The accompanying editorial in *Annals* (www.acponline.org/journals/annals/15nov98/endoedit.htm), by Dr. David Durack, was of particular interest to me.

Dr. Durack's suggestions for future guidelines about prophylac-

tic antibiotics prior to dental treatment could have far-reaching consequences for the practice of dentistry and dental hygiene.

I quote Dr. Durack: "The time has come to scale back on prophylaxis against endocarditis before dental treatment. In the matrix of procedures related to predisposing conditions, prophylaxis should be downgraded to 'not recommended' for most dental procedures except extractions and gingival surgery (including implant placement) and for most underlying cardiac conditions except prosthetic valves and previous endocarditis."

The editorialist comments that such "proposed changes would eliminate most of the prophylactic doses currently given to dental patients." He indicates that the positive aspects of such a development would be less use of antibiotics, fewer side effects resulting from antibiotic use, more convenience for patients and providers, and lower costs. The possible problems associated with such proposed changes: some additional cases of endocarditis, confusion among providers, more difficulty in evaluating the validity of some malpractice cases.

The suggestions put forward in that *Annals of Internal Medicine* editorial may sound fantastic, even somewhat frightening, for us dentists operating in a litigation-conscious society. Nothing may come of them; however, today's heterodoxy has the habit of becoming tomorrow's orthodoxy. We may have to be prepared for a further change to the guidelines.

Guidelines are but an aid to decision making; they can augment but never replace informed professional judgement. Would you have prescribed prophylactic antibiotics for the patient that I described in the opening paragraph? I would like to hear from you.

John O'Keefe
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Journal

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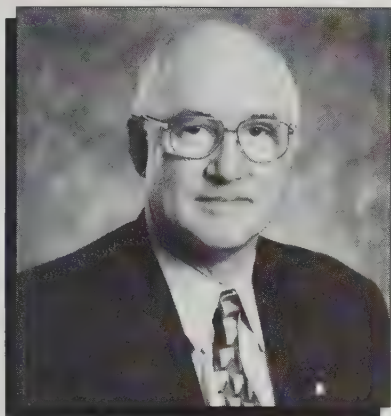
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PRESIDENT'S COLUMN

THE VALUE OF TEAMWORK



Dr. Richard D. Sandilands

As dental professionals, we consider ourselves to be the most independent of all health care providers. We work for the most part in self-created environments, where we personally select the trained staff members that will surround us. It would seem, at least at first glance, that as we are at the top of a hierarchy and have only our patients to satisfy in terms of the treatment decisions we make every day, that we must be truly independent. With that philosophical view of dentistry, it is rather easy to forget that we are in fact not independent at all, but linked to several different systems in our lives, both professionally and personally. I am about to share with you an example of the interdependence of which we are all part, and for which, over the past several months, I have become very thankful.

On January 4, 1999, a very special event took place in our family when we celebrated the birth of our second grandson, a small but healthy baby boy named Garrett Malcolm.

Our daughter Kathryn, who is a dental professional, had persevered through an extremely diffi-

cult pregnancy, which confined her to a hospital bed starting in early September, four months into her term. During that time, she relied on several separate yet critically related systems that were vital in helping her cope with the experience.

The first, of course, was the maternity team, from the obstetrician — who functioned as the team leader — to the technical personnel, other medical specialists, and the nursing staff. This group was responsible for the ongoing care of our daughter from the time of admission to the hospital to the final trip to the caseroom where our grandson was safely delivered. Although the members of this team had very specific functions, the success of their care was greatly enhanced as a result of their cooperation and collaboration.

The next system critical to this experience was the family team, including our daughter's husband and her immediate family, who assumed responsibility for comforting her in the rough days of confinement and for giving her the love and emotional support she needed to buoy her confidence as the final outcome approached.

The third team that played a key role was Dr. Kathy's dental support team, namely the receptionist, hygienist, assistant, and practice locum, who ensured that her practice could remain viable throughout this whole experience. Without the support of each member of this team, our daughter's personal future would have been compromised and her patients would have been left without adequate care for an extended period of time.

As I observed the involvement of each one of these many individuals in creating and maintaining the support systems required to bring about the successful birth of this child, I could not help but draw a parallel between medicine and dentistry.

The very essence of oral health care is dependent upon the con-

cept of a functional team of skilled and motivated professionals, each contributing to the end product, which is a healthy, satisfied patient. Just as the nursing team provides quality care by consistently monitoring the patient, so does the dental team provide the quality of care, and the standard of excellence, that our patients have learned to expect from oral health care providers.

Let me say that as a concerned but lay party in our daughter's case, I was not especially worried about the individual roles played by the members of the maternity team. Rather, I was concerned that the team leader was communicating to the various other members the seriousness of this particular case, and was being updated as to the progress of our daughter's pregnancy even though it wasn't necessary for her to perform every procedure. My faith in our medical system, which I must confess I had looked upon somewhat cynically, was partially restored during these last four months as I witnessed the members of the team carrying out their roles without letting professional differences interfere with their work.

I am not particularly given to morality lessons or storytelling. I would, however, like to use this personal experience to draw a conclusion. The overall success of patient treatment, be it general health care or oral health care, depends upon a well-trained team, led by competent physicians or dentists, and complemented by skilled nurses, hygienists, assistants, licensed practical nurses, and technicians, to name but a few.

Oral health care is a team affair! As the leaders of countless dental teams across this country, we need to acknowledge this simple fact. I know that from this January 4 onward, I most certainly will.

What do you think?

*Richard D. Sandilands, DDS
President of the Canadian Dental Association*

Journal

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NEWS UPDATE

Publication and Symposia on Evidence-Based Dentistry

The Centre for Evidence-Based Dentistry has collaborated with the *British Dental Journal* to produce a supplement on evidence-based dentistry. The semi-annual publication was launched with the November 1998 edition of the *BDJ*. It is hoped that the supplement will eventually become a stand-alone publication.

The Centre, whose main objective is to promote the teaching, learning, practice and evaluation of evidence-based dentistry, is planning to hold a meeting during the 1999 General Session and Exhibition of the International and American Associations for Dental Research to be held in Vancouver from March 10 to 13. The symposium, entitled "Evidence-Based Medicine (EBM) and Dentistry in Dental Education," will look at ways of initiating a dialogue among researchers and educators working in the field of evidence-based dentistry; developing a plan of action to

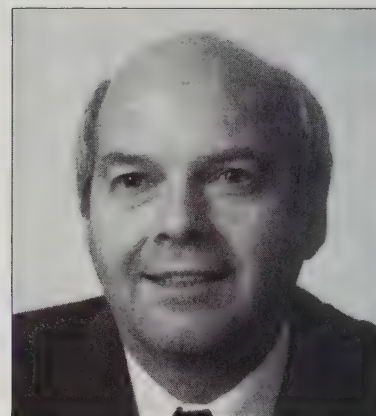
promote the application of EBM methods in dental research, education and practice; reviewing current EBM projects in dentistry; and developing a communication strategy to promote EBM. A second symposium, this one called "How to Conduct Evidence-Based Dentistry: The International Cochrane Collaboration," is also scheduled during the Vancouver meeting.

For more information on the Centre, visit its Web site at <http://www.ihs.ox.ac.uk/cebd>. ■

New CDA Governor for Saskatchewan

Following several years of distinguished service, Dr. Paul Rondeau has vacated his position as the representative of the College of Dental Surgeons of Saskatchewan on the CDA Board of Governors. Replacing Dr. Rondeau in this capacity is Dr. Gerard Gasser of Prince Albert. Dr. Gasser, who holds a Bachelor of Arts degree from the University of Saskatchewan, obtained his dental degree from the University of Alber-

ta in 1970. He is a former president of the College as well as of the Prince Albert & District Dental Society, and is currently chairman of the Office Management Committee of the College. ■



Dr. Gerard Gasser

APPOINTMENTS

B.C. Dentist New President of the Association of Prosthodontists of Canada

Dr. Peter Stevenson-Moore has succeeded Dr. Don Kramer (Toronto) as president of the Association of Prosthodontists of Canada (APC). Dr. Stevenson-Moore divides his time between his own specialty practice in Vancouver and his work at the B.C. Cancer Agency, where he is currently the provincial professional practice leader of the division of dentistry. He received his dental degree from the University of London and his license in dental surgery from the Royal College of Surgeons of England in 1971, and obtained his specialty training (Certificate in Prosthodontics and Master of Science in Chemistry) from the University of Washington in Seattle in 1977. In 1983, he became a member of the Royal College of Dentists of Canada. Before becoming president of the APC, Dr. Stevenson-Moore was president of the Pacific Coast Society of Prosthodontists. He currently serves on the CDA Task Force on Denturism, and is chair of the Task Force on Denturist and Dental Technician Legislation of the College of Dental Surgeons of B.C.

International Recognition for Montreal Dentist

Dr. Arto Demirjian received two prestigious awards from international dental organizations in 1998. Dr. Demirjian, who is chairman of the department of stomatology and professor of anatomy at the faculty of dentistry of the University of Montreal, received the Fellowship in Dental Surgery-by-Election from the faculty of dental surgery of the Royal College of Surgeons of England last June during the College's convocation ceremony. Dr. Demirjian was being recognized for his studies on growth and development, and more specifically, for his system of dental age evaluation, which is used throughout the world.

Dr. Demirjian also received the Awards Fellowship of the American College of Dentists in San Francisco last October. This award is given to a dentist who has demonstrated leadership in society as well as in the dental profession.

Last year, Dr. Demirjian established a foundation at the University of Montreal that helps finance summer students involved in dental research projects. ■



Dr. Demirjian (right) is congratulated by dean John L. Williams during the convocation of the Royal College of Surgeons of England.



Start
orthodontic screenings
early, and we'll all
have cause to celebrate.

As the leader of the dental health team, you make the call regarding your patients' orthodontic needs. The sooner you can identify the need, the better, because many serious orthodontic problems can either be prevented or more easily corrected if detected before jaw growth has slowed. That's why it's so important that all children get an orthodontic screening no later than age seven. And if no problems exist, parents can enjoy peace of mind.

The AAO, through news coverage and national TV advertising, is urging parents to

take their children for early orthodontic screenings. You'll have the opportunity to conduct more early screenings, or to refer patients to an orthodontist for screenings. You may want to ask your orthodontic colleague for a presentation or literature on orthodontic diagnostics. Or you can contact the AAO at (314) 993-1700 or our web site, www.braces.org.

With early orthodontic screening, you can give your young patients a head start on a healthy smile.



American Association of Orthodontists

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"Winning Goal!"

**Cover artist:
Dr. Joseph J. Shocrylas**

Dr. Shocrylas is a 1982 dental graduate from the University of Toronto who also holds a Bachelor of Science degree. After practicing in Toronto and British Columbia, Dr. Shocrylas relocated in Barrie, Ont., in 1989, where he currently resides. He is also the team dentist for the Ontario Hockey League's Barrie Colts.

Dr. Shocrylas has always enjoyed hockey, taking special interest in the glory years of the 1960s. He has been successful at combining his love of the sport with his favourite hobby — painting. "Winning Goal!" features the Leafs' Frank Mahovlich (Hall of Fame, 1981) beating Don Marshall to score on Jacques Plante (Hall of Fame, 1978) while Billy Harris looks on. ■



Dr. Peter Stevenson-Moore

Dr. Stevenson-Moore will be joined on the new executive by first vice-president Dr. Michael Moscovitch (Montreal), second vice-president Maj. James Taylor (Canadian Armed Forces, Halifax), and secretary/treasurer Dr. Donald Reikie (Calgary, Alta.). ■

**President of the Ordre des
dentistes du Québec
Re-elected**

Dr. Robert Salois was re-elected by general vote as president of the Ordre des dentistes du Québec

(ODQ) for a second four-year mandate. He was elected as president for the first time in 1994 after having served as a member of the Board of Directors since 1984.



Dr. Robert Salois

After receiving his Bachelor of Arts from the Séminaire de Sherbrooke, Dr. Salois studied pure and applied research at the University of Sherbrooke. He received his doctorate in dental surgery from the University of Montreal in 1970. He has been in private practice in Sherbrooke since 1975.

Other ODQ board members who were elected include: Drs. Guy Maranda and Marcel Proulx (Region 3, Quebec City); Dr. Laurent Tanguay (Region 4, Chaudière-Appalaches); Drs. Claire Deschamps, Sylvain Gagnon, Sonya Lacoursière, Claude Lamarche, Melvin Schwartz, Olga M. Skica (Region 7, Montreal); Dr. Pierre-Yves Lamarche (Region 8, Laval); and Dr. Pierre Boisvert (Region 9c, Vallée-du-Richelieu). ■

**New Registrar at the
Alberta Dental Association**

The Alberta Dental Association (ADA) has a new registrar in the person of Dr. Hugh J. Campbell. Dr. Campbell, who had been deputy registrar since 1995, is also the ADA liaison to the Admissions Committee of the faculty of dentistry of the University of Alberta. He has been on the academic staff of the faculty for the past ten years, where he is currently assistant clinical professor. Dr. Campbell obtained his Bachelor of Science degree from the University of

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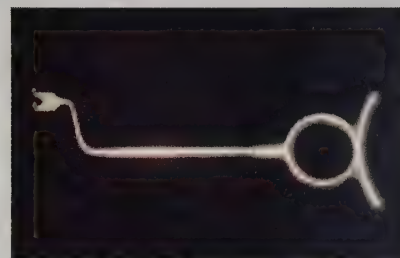
CANADIAN DENTISTS'
INSURANCE PROGRAM

The Canadian Dentists' Insurance Program — Chosen by 9 out of 10 Dentists

WHAT'S IT?

The Dentistry Canada Museum would love to find out what this old dental instrument "hooked." Measuring about 14 cm long and made of solid metal, it was found in a batch of instruments donated to the museum by Mrs. Joan Burbank of Victoria, B.C. Mrs. Burbank's husband, Dr. Erwin C. Burbank, practiced with Dr. F. Arnold Stevenson, the first president of CDA when it was founded in Montreal in 1902.

Any reader able to explain the use of this old dental instrument is asked to contact Dr. Ralph Crawford, Dentistry Canada Museum, 427 Gilmour Street, Ottawa, ON K2P 0R5. ■



Alberta in 1968 and his dental degree in 1972. He has been in private practice in Edmonton since he graduated. ■



Dr. Hugh J. Campbell

College of Dental Surgeons of Saskatchewan Elects New President



Dr. Paul Beesley

Last fall, Dr. Paul Beesley of Moose Jaw was elected as the 1999 president of the College of Dental Surgeons of Saskatchewan. A 1969 graduate from the University of Manito-

ba, Dr. Beesley has served on many committees of the College, with his primary involvement being with the Economic Committee. Dr. Beesley replaces Dr. Dennis Fuch, who will assume the position of past-president. The new vice-president of the College is Dr. Gord Johnson of North Battleford. ■

OBITUARY

Albert, Bruce C.: A 1980 graduate from the University of Saskatchewan's college of dentistry, Dr. Albert, of Moose Jaw, Sask., died December 20, 1998.

Handelman, Abram B.: A 1939 graduate from McGill University's faculty of dentistry, Dr. Handelman, of Rosetown, Sask., died October 23, 1998. He was a life member of the CDA and of the College of Dental Surgeons of Saskatchewan.

Lavallée, Jean: A 1940 graduate from the University of Montreal's faculty of dentistry, Dr. Lavallée, of Sainte-Foy, Que., died June 26, 1998.

Starr, George J.: A 1950 graduate from the University of Toronto's faculty of dentistry, Dr. Starr, of North York, Ont., died in October of last year. He was a life member of the CDA.

Thompson, Terrence G.: A 1967 graduate from the University of Alberta's faculty of dentistry, Dr. Thompson, of Richmond, B.C., died November 8, 1998. ■

INFORMATION PACKAGE

February 1999

This month's package contains a selection of reading materials on **dental implant systems**. It is available to CDA members for \$5.00 plus applicable tax.

A complete list of information packages is available upon request by calling 1-800-267-6354 or can be easily accessed on the CDA Web site at

www.cda-adc.ca

Once inside our site, please log into the "CDA Members" area and click on "Resource Centre" to view the list of packages.

New Acquisitions

Jensen, Ole T., ed. *The sinus bone graft*, Quintessence, 1999.

Misch, Carl E. *Contemporary implant dentistry*, 2nd ed. Mosby, 1999.

Langlais, Robert P., Hashimoto, Koji and Yamamoto, Hirot-suga. *Dental diagnostic imaging*, Charles C. Thomas, 1997.

Regezi, Joseph A. and Sciubba, James, J. *Oral pathology: clinical pathologic correlations*, 3rd ed. Saunders, 1999.

Terézshalmay, Géza, T. and Batizy, Levente, G. *Urgent care in the dental office: an essential handbook*, Quintessence, 1998.

LETTERS



Editor's Comment

The *Journal* welcomes letters from readers about topics that are relevant to the dental profession. The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association. Letters should ideally be no longer than 300 words. If what you want to say can't fit into 300 words, please consider writing a piece for our "Debate" section.

Direct Reimbursement

I recommend reading Dr. Randy Lang's article in the September issue of *Oral Health* regarding direct reimbursement.

This is a very timely topic which has to be addressed by all our official organizations including CDA. I urge CDA to address this issue, take a stand, and develop, in concert with all dentists, ways to inform patients and their employers about the advantages of direct reimbursement.

The CDA and the provincial associations could also contact the American Dental Association, which has more experience in promoting direct reimbursement.

George F. Zacal, DDS
Mississauga, Ont.

Dr. Dugal's Response

In answer to Dr. Zacal's plea for action from CDA on the issue of direct reimbursement, the problem is more complex than it first appears. CDA has always been a major supporter of direct reimbursement and even developed, as far back as the 1980s, a booklet for employers entitled "Direct

Reimbursement — The Complete Guide to Designing Your Own Dental Benefit Plan." Current CDA Employer Kits, which are available to provincial corporate bodies as a resource material on dental benefits issues, discusses direct reimbursement as an option for employers who are looking for alternatives for their employees.

While direct reimbursement is the simplest and purest form of dental prepayment, it is a concept which does have some major drawbacks. There is no arguing that Dr. Lang should be recognized by the dental profession for his long-standing public crusade in *Oral Health* to promote direct reimbursement. The fact that Dr. Zacal may not be aware of CDA's endorsement of direct reimbursement reflects one of the major obstacles in the path of making direct reimbursement a household name. That obstacle is marketing. There is no incentive for any party outside of organized dentistry to promote direct reimbursement, leaving dental organizations such as the CDA — which have very limited funds — with the difficult task of giving direct reimbursement its proper recognition. The American Dental Association (ADA), also a strong advocate of direct reimbursement, has finally thrown in the towel and admitted that it was not being very successful in promoting direct reimbursement in the fashion that it had been. As a result, the ADA has committed to spending three million dollars over three years to educate and enrol third-party administrators to become involved with direct reimbursement.

This means that pure direct reimbursement as we know it will be less common, but it does not spell the end of the concept. This new brand of direct reimbursement will still maintain the basic principle of the original version — total freedom of choice without third-party interference or influence. The third-party administrators solicited

by the ADA will administer direct reimbursement type dental plans based on the principle previously outlined. The good news in Canada is that we were ahead of our American confrères in anticipating this much needed change. Alberta and the four Atlantic provinces already have a network of third-party administered, pure, defined contribution dental benefit plans. Keep that term in mind — defined contribution. Future articles in the *CDA Journal* will attempt to delve somewhat deeper into defined contribution and the direct reimbursement issue, and will examine other drawbacks which have kept this concept from growing as well as explore ongoing solutions to these problems.

Luc Dugal, DMD

Dental Benefits Issues representative for Alberta and consultant to the Committee on Claims Management Calgary, Alta.

The Safety of Dental Composite Biomaterials

I recently read Dr. Jones's interesting article "Dental Composite Biomaterials" in the November issue of the *CDA Journal* (*J Can Dent Assoc* 1998; 64:726-31). As a naturopathic physician, I am, along with many of my colleagues, very concerned with cytotoxicity. It seems that in the past little attention was placed on the toxicity of dental materials while strength and durability received the greatest emphasis. I am slowly seeing a shift in dentistry towards greater interest in finding safer dental materials and increasing cytotoxic testing. I am encouraged by this trend.

I would also like to know Dr. Jones's thoughts on Dr. Samuel Wankine's Diamond products (DiamondLite, DiamondCrown, etc.) and methods of cytotoxic testing.

Trevor Salloum, ND
Kelowna, BC

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Dr. Jones's Response

In response to your letter, I do not have any thoughts or opinions on Dr. Samuel Waknine's Diamond products since I have no knowledge of them.

As for your comment on the shift in dentistry towards safer dental materials, it is rather puzzling — I for one was not aware that any of the materials currently being used were unsafe. Safety is a relative term; in the United States, for example, a person has a 1 in 5,300 chance of dying in a car crash, yet the average person does not consider cars unsafe. Wherever the evidence regarding chemical safety or cytotoxicity is inconclusive, the scientific vacuum is filled by the assertion of contradictory certitudes. A classic example of this being the case of BSE/CJD in the United Kingdom.

You ask for my views on cytotoxic testing. I assume that you refer to in vitro cytotoxicology test methods. These cell culture test methods have grown in popularity since the early 1950s when they became established. In recent years, increasing protests by animal rights activists have forced researchers and regulatory agencies to direct attention to the development of alternative methods of toxicity testing. Historically, the use of animals in biomedical research has provided (and will continue to provide) very valuable information on medical and dental products and on drugs and various chemicals.

Unfortunately, no single method of toxicity testing can provide the simple answer on how safe a chemical is because of the wide variety of toxicokinetic factors involved. In some cases, it is highly uncertain whether observations in animals will be relevant to humans, particularly if large scaling factors have to be used. The testing of chemicals in animals is often conducted at much higher doses than humans are normally exposed to in order to produce results that are clear and statistically significant. Extrapolating from high dose levels which produce effects that are unambiguous

in animals, and applying the results to humans whose exposure levels are much lower in order to determine a risk, is a very uncertain calculation. The one thing experts agree on is that there is no clear and simple relationship between cell culture testing and animal testing. A cell culture study by Olea and others (*Environ Health Perspect* 1996; 104:298-305), which reported potential estrogenic effects due to Bisphe-nol-A, has not been substantiated by others. However, a recent study by Geurtsen and others (*J Biomed Mater Res* 1998; 44:73-7) has shown that TEGDMA monomer, which may leach from some composite systems, can have a severe cytotoxic effect by reducing the proliferation of 3T3 cells to 78% of the control assays. What does this mean? And what is the clinical significance of this effect, if any? The truth is that we cannot easily provide definitive answers following cytotoxic testing.

Derek W. Jones, PhD, FIM, C.Chem,
FRSC(UK), FBSE
Professor of Biomaterials
Dalhousie University

Advertisement

I was reading the November 1998 issue of the CDA *Journal* when I discovered, on page 693, the advertisement for the Dairy Bureau of Canada.

I have a problem with the way this ad is presented in the magazine. The title (*Nutrition Bites*), the way it is displayed, and the whole text is set up to look like an article, and not what it is — an advertisement.

I asked my eight staff members if they felt this was an ad or an article, and they all said it looked like an article.

The Dairy Bureau uses this technique in magazines sold commercially. I would request that, as the editor, you examine this type of advertising carefully and do more to identify it as an ad and not as a scientific, impartial research paper of great interest to the profession.

Bruce Ward, DDS
Coquitlam, BC

Editor's Response

Dr. Ward makes a fair point that is well taken. In future, we will ensure that similar pieces are more clearly labeled as advertisements. In an upcoming editorial, I will discuss the dilemmas, with regard to advertising, facing the editor of a publication like the *Journal*.

Quality Assurance in the Dental Profession

Dr. Brothwell's recent treatise on "Quality Assurance in the Dental Profession" (*J Can Dent Assoc* 1998; 64:726-31) is replete with paradox. In his abstract he claims to provide a framework for understanding quality assurance (QA). He also proposes "a new model for use in assessing the quality of health care." However, he fails to provide a single clinical or practical example of this "new model," and I question whether he has met his stated objective.

The CINOT program in Ontario is mentioned as an example of QA through system design and performance monitoring. It is well-established and documented that there is a wide variability in how this plan is administered from health unit to health unit, which is hardly an example of consistency or quality.

An example of prospective review in the area of management or administrative QA is provided under the term "predetermination." This is yet another poor example of what quality assurance should be about. For a reviewer to make judgements on the necessity and appropriateness of care, without ever examining the patient, is an unwarranted intrusion in the ability of the dentist to exercise clinical judgement and an interference in the established process of informed consent that will subject the reviewer to serious liability exposure. It is the very antithesis of quality assurance in dentistry. The only model where this distorted form of "predetermination" exists in Canada is the Non-Insured Health Benefits program. In that case, it has nothing to do with ensuring quality and

everything to do with cost containment. These two issues should never be confused.

It is important to distinguish between clinical practice guidelines (CPGs) and administrative criteria for the purpose of adjudicating dental claims. The former are based on a critical appraisal of the best available scientific literature and are systematically developed to assist practitioners and patients in making informed decisions about appropriate health care in specific clinical situations.

Dr. Brothwell is also seemingly confused with respect to the difference between clinical practice guidelines, clinical standards, and legal standards. While one may influence the other, they are not necessarily the same thing. In the interests of brevity, I refer the reader to an excellent article by Jutras entitled "Clinical Practice Guidelines and Legal Norms" (*CMAJ* 1993; 148:905-8).

The CDA has recognized the importance of QA in dentistry. In this regard, the Board of Governors will be considering, in March 1999, a proposal for the formation of a Canadian collaboration on clinical practice guidelines in dentistry that plans to take an evidence-based, national approach to the development of CPGs. This should provide a rational and scientific basis for quality assurance in dentistry.

*Peter Fendrich, BA, DDS
Chairman, Ad Hoc Committee on
Clinical Practice Guidelines
Canadian Dental Association
London, Ont.*

Dr. Brothwell's Reply

I thank Dr. Fendrich for his critique of my article and welcome the opportunity to address his four issues of concern.

1) The objective

In his comments, Dr. Fendrich questions if the stated objective of the article was met. Although providing practical examples was not a stated objective of the article, I agree that examples would have improved the review. Though examples were included in the

original manuscript, they were removed to meet article length requirements.

2) The CINOT program

Dr. Fendrich refers to the fact that it is "well-established and documented that there is a wide variability in how this plan is administered," yet fails to provide references to publications or official reports to support this claim. Although I expect that few of the accused dental directors claim perfection, quality assurance within the CINOT program does consider the structure, process, and outcome of dental care as well as system capacity and community coverage. As such, it addresses all aspects of quality assurance and does so with prospective, concurrent, and retrospective reviews. Most practitioner concerns with the CINOT program stem from measures which address system capacity. Simply stated, CINOT works within a limited budget (despite continued lobbying efforts), and dental directors must ensure that only covered services are provided. Allowing additional services would exceed the available program resources and make the program non-sustainable. Thus system capacity is an important consideration in quality assurance.

3) Predetermination

Contrary to Dr. Fendrich's opinion, predetermination is an important component of quality assurance. Although the vast majority of practitioners exhibit good clinical judgement in their treatment planning, some are less noble. I once declined, for example, a proposed treatment plan for \$1,200 in restorative services on the primary incisors of a 6 1/2-year-old child. The predetermination process allowed me to review the pretreatment radiographs and determine that the primary incisors would be exfoliated shortly. These resources therefore were still available for more necessary services. Dr. Fendrich needs to be aware that excluding cost consideration from quality assurance is simply a convention decided upon by parties with a vested interest in protecting

the concerns of private practitioners. I assume that we will agree, at least as pertains to the aforementioned example, that consideration of system capacity (cost containment) was an effective measure in quality assurance.

4) Confusion regarding clinical practice guidelines, clinical standards, and legal standards

I believe Dr. Fendrich may have misinterpreted this area of the article as there was no intention to equate CPGs, clinical standards, and legal standards. The article states: "Today, the dental profession is developing clinical practice guidelines and standards of practice as strategies to ensure quality in the provision of dental services" (p. 727). This does not equate the two. Perhaps the following change would clarify things: "These guidelines will form the foundation for the development of standards for use by the Royal College of Dental Surgeons of Ontario in assessing the quality of dental services rendered in Ontario."

Thank you for your interest in this issue.

*Doug Brothwell, B.Ed., DMD
Aurora, Ont.*

Fee Guides

If Dr. Christensen's assertion that "the provincial fee guides have effectively slowed the increase in fees in this country over the years" is correct (*J Can Dent Assoc* 1998; 64:698-9), then in my opinion, they have served one valuable function — to keep dental services affordable for many Canadians. In reality, the plain and simple truth is that dental services are no longer affordable for many low-income Canadians. Most studies that have investigated barriers to dental services for this segment of the population have shown that the leading barrier to access is financial.

I am familiar with the common arguments advocating an increase in fees for dental services such as the soaring cost of overhead (approaching 70% these days), but I am also aware that Revenue

Continued on page 96



Making Informed Decisions

George Sweetnam, B.Sc., DDS

One of the roles of the Dental Benefits Issues (DBI) Committee is to report to the Board of Governors on emerging issues. To this end, the CDA library and committee support staff compile reading material that may be of interest and circulate it to the committee members for their review and consideration.

The topics covered are usually varied and quite enlightening. For example, the current selection has an article about a preferred provider organization (PPO) that is trying to get pharmacists to discount fees. It is nice to know we are not the only profession grappling with this issue. Another article, this one written by a Florida dentist, extols the virtues of direct reimbursement plans while acknowledging their limited marketability. The solution: a direct assignment plan that provides outside administration for employers. This sounds a lot like an administrative services only (ASO) benefit plan.

Most worthy of comment, though, is a report on the bankruptcy of a fairly large New England management service organization (MSO). Dental MSOs and their value are currently getting press in both Canada and the U.S.

We have a distinct advantage over our neighbours to the south

since business interest in the attractive dental revenue stream usually evolves in the U.S. before moving northward. This means that time is on our side — if we make use of it. We also have the benefit of someone else's experience, so that when we see a flag being raised, it can help focus our concerns. My mind experiences déjà vu when I hear the phrase, "Doctor, let us take over the management of your office and leave you free to do what you like to do best — just dentistry." If you recall, it was first heard when capitation plans were being promoted years ago.

MSOs provide management and administrative services to affiliated or purchased dental practices. If the practice is purchased, the dentist is usually contracted to remain affiliated with the practice for an extended period of time. Either way, the MSO will be solely responsible for the management and administration of the practice.

Participation in a dental MSO can be attractive to two types of practitioners in particular: those who do not like practice management and would gladly forfeit control of this aspect of the work, and those who are so good at practice management that the value of the

practice is high enough to be beyond the reach of, and sale to, younger dentists.

Last October, CDA published a fact sheet entitled "What Every Dentist Should Consider Before Affiliating With A Management Service Organization." The fact sheet goes into detail as to the types of management services available and the factors that should be considered when selling practice assets and signing an employment contract or affiliation agreement. The service contracts vary, and while some MSOs do not interfere with the dentist-patient relationship, leaving clinical decision-making to the dentist, others may require dentists to follow clinical guidelines or protocols and may even require them to use specific supplies and materials regardless of their preferences.

Dentists should remember that some MSO contracts could result in a conflict with provincial licensing authorities if a dental practice is owned by a non-dentist. And since most MSOs require participation in their marketing plan, dentists should make sure that their activities respect applicable legislation on advertising and are in accordance with principles of professional conduct such as CDA's Code of Ethics.

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The Practice Management Support Services (PMSS) department, in cooperation with the Communications department, has produced this fact sheet in the hope that CDA members who deal with MSOs will be able to protect their own interests.

CDA also works in other ways to provide member assistance and protection. The PMSS department and the DBI Committee are working to ensure fourth-year dental students acquire more practice management skills. Unfortunately, this is not a priority at some academic institutions, and for some students, a weekend CDA-sponsored course is all they get on the subject. It seems almost unfair to send these highly technically trained individuals into society with limited business skills. It is rather like having a well-trained pilot with superb flying skills but no knowledge of navigation.

A review of the literature on MSOs does raise concerns. Financial settlement for the sale of a

practice and assets may involve stock in the dental MSO. The report of the bankruptcy of the New England MSO leaves one wondering about the risk of accepting stock as payment, especially if the selling dentist is nearing retirement. MSOs are not immune to the volatility of the stock market, which is a fact that cannot be ignored when dealing with these organizations.

The bottom line, as emphasized in the fact sheet, is so important — seek legal, financial, and professional advice before you sign a contract with an MSO or provide information to one. Make sure that the decision you make is a well-informed decision. ■

Dr. Sweetnam is in private practice in Lindsay, Ont. He is a member of CDA Executive Council and chair of the Dental Benefits Issues Committee.

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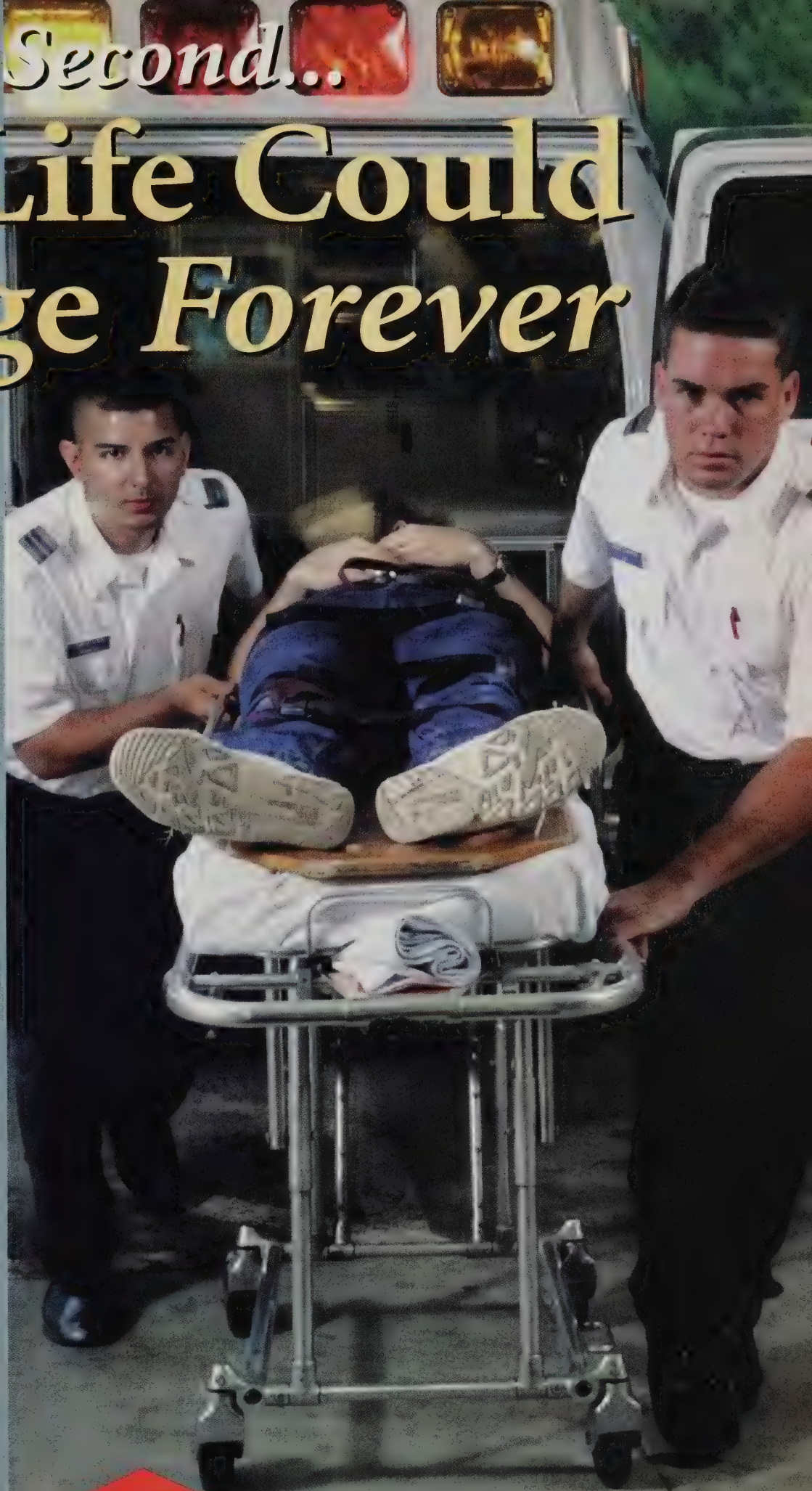
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SELF-LEARNING SELF-ASSESSMENT

The SLSA Program is published as a monthly feature in the *Journal of the Canadian Dental Association* as a resource for dentists. For further information see the September 1998 issue of the *Journal*.

QUESTION 21

Retrograde periodontitis

1. relates to pulpal disease.
2. creates a pseudo pocket.
3. originates from the tooth apex and accessory canals.
4. results in permanent damage to cementum.

A. 1, 2, 3 B. 1 and 3 C. 2 and 4
D. 4 only E. All of the above

ANSWER: A

RATIONALE:

Retrograde periodontitis is a term related to a periodontal lesion which progresses in the opposite direction to that experienced in marginal periodontitis. It has none of the basic characteristics of periodontal disease, resulting in no permanent damage to the cementum or the periodontal fibres. The loss of attachment produced by such lesions can be completely reversible through endodontic therapy alone since the etiology relates to pulpal disease.

Pulpal disease can be both acute and chronic. In the chronic state, degeneration of the tissue occurs. Pulpal inflammation is accompanied by increased intrapulpal pressure, as a result of which toxic agents can be expressed through the apex as well as by lateral and accessory canals into the adjacent periodontium. From here, tracking along the ligament can occur to form a fistula which, by penetrating the gingival sulcus, causes a pseudo-periodontal pocket simulating periodontal disease and termed retrograde periodontitis.

The diagnosis of pulpal periodontal lesions may be simple, especially when an adequate long term history of the patient is available. However, it can be difficult in multi-rooted teeth, where pulp testing might give a vital response despite complete necrosis in one or more canals. The non-vital endodontically treated tooth with the combined lesion presents an even greater problem. Careful probing of the lesion will usually provide information regarding the progression of periodontal disease. The periodontal lesion will usually be broader at the point of origin and calculus or root roughness will be detected.

Additionally, signs of marginal periodontitis will be evident elsewhere. When a definitive diagnosis cannot be made, it is prudent to initiate endodontic therapy and, after instrumentation, place calcium hydroxide as an intracanal medicament and then observe.

REFERENCES:

1. Solomon, C., Chalfin H., and Kallert, M. et al. The Endodontic-Periodontal lesion: A rational approach to treatment. *JADA* 126:473-9, 1996.
2. Paul, B.F., and Hutter, J.W. The endodontic-periodontal continuum revisited: New insights into etiology, diagnosis and treatment. *JADA* 128:1541-7, 1997.

QUESTION 22

The "hybrid layer" in the new dentin bonding systems

- A. is a combination of dentin and polymer resin.
- B. forms a non-diffusible layer to protect the odontoblasts.
- C. acts as a barrier to dentinal fluid.
- D. prohibits invasion of dentinal tubules by microorganisms.
- E. All of the above

ANSWER: E

RATIONALE:

The smear layer produced on cutting enamel and dentin contains hydroxyapatite crystals and denatured collagen. It is 1-5 microns thick. Although in part porous, the smear layer is weakly attached to the underlying dentin and, for this reason, new adhesives partially remove and penetrate this layer. In addition, since dentin becomes "wet" with dentinal fluid, the new bonding agents include hydrophilic monomers to penetrate the moisture layer. These hydrophilic monomers penetrate decalcified intertubular dentin for 1-5 microns to make a "hybrid layer" or inter-diffusion zone. It appears to be the primary site for dentinal adhesion which is greatly assisted by the hydrophilic components.

There are several primers available to dentin bonding systems such as 4-methacryloxyethyl trimellite (4-META) and biphenyl dimethacrylate (BPDMA). All primers infiltrate and encapsulate collagen fibres of the dentin after these have been exposed by the etchant. Thus,

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the dentin adhesives that form such a "hybrid layer" exhibit high bond strengths. It is also claimed that, by forming a non-diffusible layer on the dentinal surface as well as in the peritubular dentin, the odontoblast processes are shut down. The dentinal fluid flow is also stopped, and thus postoperative sensitivity is basically eliminated. The invasion of tubules by microorganisms is also prohibited to the benefit of the health of the pulp since it has been shown that such a microbial invasion leads to pulp inflammation and even necrosis.

REFERENCES:

1. Kanka, J. Wet Bonding: effect of drying time and distance. *Am J Dent* 9:273-6, 1996.
2. Leinfelder, K.F. Current developments in dentin bonding systems: *JADA* 124:40-2, 1993.
3. Heymann, H.O. and Bayne, S.C. Current concepts in dentin bonding: focussing on dentinal adhesion factors. *JADA* 124:27-36, 1993.

QUESTION 23

A bonded amalgam

1. prevents marginal leakage.
2. reduces postoperative sensitivity.
3. creates a biologic seal of the pulpodentinal complex.
4. requires the use of retention pins in large restorations.

- A. 1, 2, 3 B. 1 and 3 C. 2 and 4
D. 4 only E. All of the above

ANSWER: A

RATIONALE:

Bonding amalgam to tooth structure with an acid etch technique and placement of a resin adhesive is making some principles of the traditional amalgam cavity preparation obsolete.

The cavity for an amalgam bonded restoration still requires an adequate form of resistance. Any fragile cusps and walls should be reduced and protected with amalgam.

In large wide complex cavities, some form of mechanical retention is advisable. However, combining pins with adhesives is contraindicated, since such a combination caused extensive tooth failure when observed in laboratory studies. Conditioning of the enamel and dentin with phosphoric acid and coating of both tissues with a chemically adhesive resin system is not only biologically acceptable, but it prevents marginal leakage and improves bond strength to the tooth structure.

This technique further permits more conservative cavity preparations to be made. It eliminates the use of retention pins with the risk of pulp exposure and periodontal perforation. Tooth structure is reinforced, and there is a reduced incidence of post-operative sensitivity and recurrent caries. Finally, it creates a biologic seal of the pulpodentinal complex.

REFERENCES:

1. Ianzano, J., Gwinett, J.A. Strength of amalgam bonded with 4/META. *J Dent Res* 70:300, 1991.
2. Gwinett, J.A., Baratieri, L.N., Monteiro, S. et al. Adhesive restorations with amalgam: Guidelines for the clinician. *Quintess Int* 25:687-95, 1994.

QUESTION 24

A maxillary right first premolar requires extraction because of failed endodontic therapy. Adequate bone is present to permit placement of an implant. You would extract the tooth and

- A. place an immediate implant.
- B. perform thorough curettage of the socket followed by immediate implant insertion.
- C. perform thorough curettage of the socket and place an immediate implant with a rotational flap to achieve primary closure.
- D. allow for a period of healing prior to implant placement.

ANSWER: D

RATIONALE:

If a tooth has been extracted because of failed endodontics, or if a periapical lesion is present, it is advisable to avoid an immediate implant. Instead, a delay is advocated before placement. Although past clinical practice has been to curette a periapical lesion thoroughly and then place an immediate implant, such a procedure tends to retain some periapical pathosis to the detriment of the implant's longevity. Immediate implant placement is, however, indicated in cases of traumatically avulsed teeth and condemned fractured teeth.²

The advantages of placing an implant into a fresh tooth socket are a gain of at least six months for completion of the final restoration, as well as the preservation of greater bone volume at the extraction site. When an implant is immediately placed, there can be difficulty in establishing adequate soft tissue coverage of the exposed implant. Membranes, as used for guided tissue regeneration, have been adopted for this purpose. However, exposure of the membranes to the oral environment has resulted in infective penetration into and under the membrane, which can result in implant failure. To this end, Missika et al. suggest a compromise of waiting 4-6 weeks before placement.

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1. Meffort, R.M. Issues related to single tooth implants. *JADA* 128:1383-90, 1997.
2. Missika, P., Abbou, M., Rahal, B. Osseous regeneration in immediate post-extraction placement. A literature review and clinical evaluation. *Pract Periodontics Aesthet Dent* 9(2):165-75, 1997.

QUESTION 25

Gingival recession on the labial of permanent mandibular incisors in children is self-correcting.

Eight to ten percent of children show labial gingival recession on permanent mandibular incisor teeth.

- A. The first statement is true, the second is false.
- B. The second statement is true, the first is false.
- C. Both statements are true.
- D. Both statements are false.

ANSWER: C

RATIONALE:

The literature reports that approximately 8-10 % of children show labial recession on permanent mandibular incisor teeth. It has become common practice to subject these teeth to surgical procedures of either a lateral sliding flap or a free gingival graft and when orthodontics is contemplated, the surgical repair usually precedes the orthodontic therapy.

A recent study, however, of children aged 6-13 years allowed observation and measurement from the gingival margin of the recessed areas to the cemento-enamel junction. Observation over 1, 2 and 3 years saw a gradual reversal of the recession. No one site was worse and the majority improved. Therefore, observation rather than active surgical treatment should be the rule.

REFERENCES:

1. Andlin-Sobocki, A., Marcussen, A., Persson, M. et al. Gingival recession in children. *J Clin Periodont* 18:155-9, 1991.

THIS MONTH'S FIVE NEW QUESTIONS

QUESTION 26

N1-type tooth stains can be prevented through good oral hygiene.

The removal of N3-type stains may require use of oxygenating agents as well as professional cleaning.

- A. The first statement is true, the second is false.
- B. The second statement is true, the first is false.
- C. Both statements are true.
- D. Both statements are false.

QUESTION 27

Periodontal diseases are

1. multifactorial in origin.
2. related to the host's inflammatory response.
3. chronic and inflammatory in nature.
4. affected by the person's neutrophils and antibodies.

- A. 1, 2 and 3
- B. 1 and 3
- C. 2 and 4
- D. 4 only
- E. All of the above

QUESTION 28

Leukedema is a condition which

1. resembles leukoplakia.
2. is an abnormality of the buccal mucosa.
3. requires excision.
4. requires no treatment.
5. occurs bilaterally.

- A. 1, 2, and 3
- B. 2 and 3
- C. 3 and 5
- D. 1, 2, 4, and 5

QUESTION 29

Varnishes and calcium hydroxide will seal cut dentin against leakage of dentinal fluid.

Bonding agents can be used for bonding porcelain veneers to tooth structure.

- A. The first statement is true, the second is false.
- B. The second statement is true, the first is false.
- C. Both statements are true.
- D. Both statements are false.

QUESTION 30

Periodontal disease in a pregnant woman will increase the risk of having a premature low birth-weight baby

- A. sevenfold.
- B. threefold.
- C. twofold.
- D. not at all.

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CLINICAL PRACTICE



Back to Basics: Making a Vacuum-Formed, Custom-Fitted Intraoral Mouthguard Using the "Dry Model" Technique

George Maroosis, DDS

ABSTRACT

For a mouthguard to function properly, it must fit well. It is possible to produce a well-fitting mouthguard using the "dry model" technique, which is relatively inexpensive and easy to learn. Custom-fitted intraoral mouthguards help prevent or reduce the severity of concussions as well as minimize oral cavity injuries.

MeSH Key Words: equipment design; mouth protectors.

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Heat Pressure Technique vs. "Dry Model" Technique

The efficacy of a custom-fitted intraoral mouthguard depends on two factors: the quality of the laminate and the intimacy of the fit. For the mouthguard to function as a shock absorber, it is essential for it to fit properly and to feel comfortable. After all, if the mouthguard is not worn, it will not work.

Currently, many clinicians in the U.S. and Canada are vacuum forming mouthguards to "wet" models, a procedure which does not produce a very good fit. To correct that problem, clinicians have been using a "heat pressure" machine. That machine costs approximately \$4,000 (Cnd.). The "dry model" vacuum machine, on the other hand, costs about \$600 (Cnd.) and produces a fit comparable to the one obtained by the

heat pressure machine. The dry model technique produces a well-fitting mouthguard that is less bulky and has a limited extension, which allows for talking, mouth breathing and reduced gagging.

The purpose of this paper is to provide Canadian dentists with the basic knowledge to fabricate mouthguards using the dry model technique. Dentists have a unique opportunity to provide a valuable service to their community by making mouthguards for school and amateur sports teams at minimal cost.

Materials

There are many different mouthguard laminates and vacuum machines available. This office uses Pro-Form products, which are available in Canada through Ash Temple Limited. Once the basic fabrication technique is mastered, the vacuum

machine can be used with different laminates to create bleaching trays, temporary bridges, etc.

Technique

Alginate is the most commonly used impression material for the fabrication of mouthguards and is the material used in the technique described below. Once the impression is made, the model is poured in coecal stone. The coecal stone is easy to use and hard enough to support the trimming procedures. This is an important characteristic as an accurate model is essential.

When the full arch model has dried, all small plaster bubbles and artifacts are removed.

Using the model trimmer, the base of the model is reduced until a small hole appears in the palate. In the case of a very shallow palate, a hole may be obtained by using an electric drill. The tray of



Fig 1: Model before trimming.

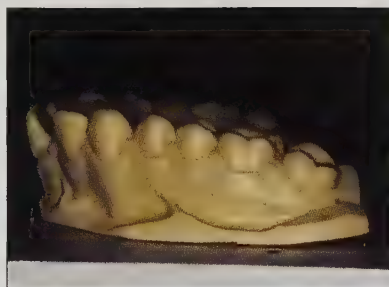


Fig 2: The trimmed model.

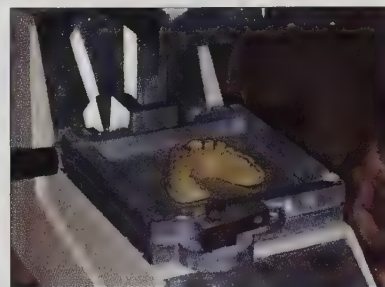


Fig 3: Laminate adapted to the model.

the model trimmer is adjusted at such an angle that the periphery of the model can be eliminated, creating a clear path for suction. If this elimination cannot be obtained without damaging the teeth, the edge can be modified using a lab knife.

This wet model is then put aside and allowed to dry completely overnight.

In preparation for vacuum forming, a rubber bowl with a diameter slightly less than the laminate is filled to the brim with ice water. (Ice cubes do not disturb the process.) The laminate is heated and allowed to droop one-half inch, then lowered onto the model and vacuum adapted. If a Pro-Form laminate is being used, a wet finger can help position the insert before the vacuum is activated.

Immediately following the adaptation, the laminate and model are removed from the vacuum machine, inverted and placed into the bowl of ice water. The model will not get wet because the periphery of the laminate is greater than the diameter of the bowl.

The laminate surrounding the model will cool quickly and uniformly. After about one minute, the laminate and model are removed from the bowl of water, and the excess laminate is trimmed to the model using kitchen or lab scissors.

Further trimming to the required periphery of the actual mouthguard is done while the laminate is on the model. This can be accomplished using a Stanley carpenter's knife, or a lab knife heated over a Pieso or Micro Torch flame. The same Pieso torch can be used to lightly heat the

mouthguard periphery to make it easier to round the edge with a wet finger.

Adapting the mouthguard laminate to the dry model gives the intimate and accurate fit.

To facilitate the removal of the mouthguard from the model, the model and mouthguard together are totally immersed in water for about ten minutes. If a clear laminate is being used, the colour of the plaster will change as it becomes saturated. The process can be accelerated by slightly lifting the periphery of the mouthguard.

Once the mouthguard is removed from the model, the margins of the mouthguard can be buffed using a cloth wheel. Pro-Form has a finishing wheel (P390-009) that gives an excellent result.

This technique does not require an extension of the periphery because the retention is provided by the intimate fit to the teeth.

Discussion

This technique is relatively inexpensive and easy to learn, and can be used to produce a quality mouthguard for such sports as soccer, basketball, rugby, field hockey, karate, etc. Custom-fitted intra-oral mouthguards help prevent or reduce the severity of concussions as well as minimize oral cavity injuries. By learning to make proper, custom-fitted mouthguards, dentists can provide a valuable service to their community. There is a great deal of satisfaction involved in doing this type of work, and the public relations value for dentistry in general is enormous. ■

Acknowledgment: The author is indebted to Dr. C.R. Castaldi of

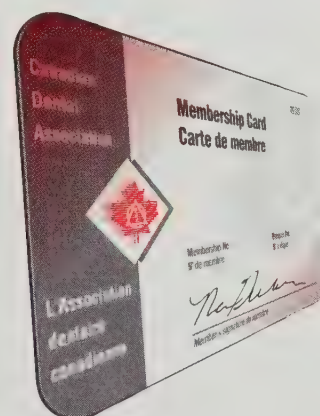
the University of Connecticut and to Dr. Bill Godwin of the University of Michigan for their continuous input, and to the Academy for Sports Dentistry for its ongoing research.

Dr. Maroosis was chairman of the Mouthguard Committee of the Ottawa Dental Society (1969-71). His work on the committee resulted in the development of a booklet and a series of clinics on mouthguards. He is a member of the Academy for Sports Dentistry.

Reprint requests to: Dr. Maroosis, 9-500 Hazeldean Rd., Kanata, ON K2L 2B5.

The author has no declared financial interest in any company manufacturing the types of products mentioned in this article.

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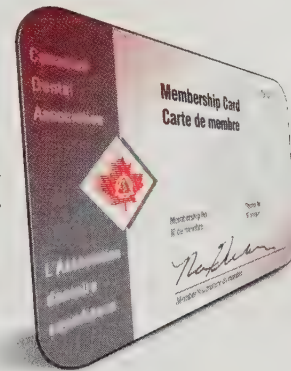
John Kershman, Dentist, CDA member and community volunteer.

John Kershman loves to bike. And shares his love of biking with others. Every Sunday during the summer, John and a team of volunteers close down a stretch of scenic parkway to be enjoyed solely by bicyclists, young and old. John's also involved in other charitable community ventures. Quite a commitment considering John runs a successful dental practice. But, because he's a CDA member, he can enjoy his volunteer work as much as his career.

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CLINICAL PRACTICE



Infective Endocarditis and Dentistry: Outcome- based Research

Joel B. Epstein, DMD, MSD, FRCD(C)

ABSTRACT

Antibiotic prophylaxis for prevention of infective endocarditis has long been recommended for patients receiving dental care. Two studies of patients with endocarditis found limited risk associated with dental treatment. It is imperative that guidelines for therapy be based on outcome studies and on evidence of safety, efficacy and cost effectiveness.

MeSH Key Words: antibiotic prophylaxis; dental care; endocarditis infective/prevention and control.

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For years, guidelines for the prevention of infective endocarditis have recommended antibiotic prophylaxis for certain patients receiving dental care. The guidelines are revised from time to time, with the most recent revision completed in 1997. These guidelines have been based on animal studies and reports of individual patients where infective endocarditis has developed. Over the years, case reports and potential legal implications have motivated health care providers, including physicians and dentists, to recommend and institute antibiotic prophylaxis before dental procedures for individuals with specific heart conditions, particularly those with valvular disease, valve replacement or valvular regurgitation.

The most recent guidelines for the prevention of infective endocarditis and their implications for dental practice were recently

reviewed in a paper published in the *Journal*.¹ That paper highlighted that infective endocarditis is an extremely rare condition and that the attendance for dental management is common in Western society. Correlation between dental visits and subsequent endocarditis does not prove cause and effect, especially in light of the fact that dental treatment is a possible cause of very few cases of infective endocarditis.

Two important outcome studies have recently been published.^{2,3} These two outcome-based studies have similar findings and indicate that the current guidelines, which are not based on population-based outcome studies, require further review.

A Dutch study² assessed 427 patients with endocarditis and found that 64% of these patients would have been eligible for antibiotic prophylaxis based on

previously known cardiac conditions. Twenty-three per cent had undergone a procedure that would have indicated prophylaxis within one-half year of onset of endocarditis, and 11% had undergone a procedure within 30 days of onset. It was thought that prophylaxis may have prevented 17% of cases within 180 days of onset, a period of time that extends beyond what many believe to be the appropriate incubation period, and 11% of cases within 30 days, representing only 5.3% of cases. Therefore, even if antibiotic prophylaxis was 100% effective and was provided for all at-risk patients receiving dental treatment, only a small fraction of cases of endocarditis (5.3%) would be potentially prevented.

A more recent study assessed patients in 54 hospitals in the Philadelphia area.³ A total of 287 cases of endocarditis were

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identified; excluded from analysis were patients with endocarditis associated with intravenous drug use. It was found that in the three months preceding the diagnosis of endocarditis, dental treatment was no more frequent in these patients than in non-infected age- and sex-matched control patients. Of the 273 patients with endocarditis, 38% knew of cardiac conditions; of the control patients, only 6% were aware of cardiac conditions. Patients with endocarditis had a history of mitral valve prolapse, congenital heart disease, valve surgery, rheumatic fever or heart murmur more frequently than did control patients. In the at-risk patients with known cardiac lesions, dental therapy was significantly less common than among the control patients. In this study, dental treatment was not seen to represent a risk for infective endocarditis, even in patients with cardiac valve abnormalities. However, the presence of cardiac valvular abnormalities did represent a risk factor. No dental procedures other than tooth extraction in the two months prior to hospital admission were identified as risk factors; however, dental extractions were uncommon. Of the patients with endocarditis who had a known cardiac valvular abnormality and dental treatment (10.6%) in the previous three months, those who had dental therapy one month prior to diagnosis of endocarditis (4.4%) were found to be at no significantly increased risk from dental treatment, although the number of at-risk patients was small. The statistical risk for endocarditis did not change regardless of whether antibiotics were used in dental treatment. Very few cases of infective endocarditis would be prevented even if antibiotic prophylaxis was provided for dental procedures and was 100% effective.

It is important to recognize that failures of prophylactic antibiotic regimens have been recorded and indeed have been used to assist in modifying guidelines for prophylaxis coverage. Additional concerns about antibiotic prophylaxis

include cost effectiveness and the increased risk of resistant bacteria in society.^{1,4}

It is imperative that guidelines for therapy be based on outcome studies (when available) and on evidence of safety, efficacy and, increasingly, cost effectiveness. The new data available about infective endocarditis, including the limited risk associated with dental treatment, the time of incubation and the increasingly available outcome-based evidence, require continual review of the current historically and empirically based recommendations. Current recommendations are essentially based on animal models and limited human studies. As these guidelines adapt to current information, it becomes increasingly important that the medical, dental and legal professions and the public be informed and up-to-date about knowledge and guidelines. ■

Dr. Epstein is head of dentistry at the Vancouver Hospital and Health Sciences Centre; on the medical-dental staff of the B.C. Cancer Agency; professor and head of hospital dentistry at the University of British Columbia; and research associate professor at the University of Washington.

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Letters

Continued from page 81

Canada consistently documents dentists as having the second highest employment income by occupation (physicians being the highest).

Dr. Christensen is proposing that "real change is needed immediately to keep the fee guide system from collapsing." I am proposing that a debate of this nature cannot take place in a "dental vacuum." The mission statement of the Royal College of Dental Surgeons of Ontario (the licensing body of all dentists in Ontario) is "Protecting the public and guiding the dental profession."

It is not in the best interest of the public to seriously consider raising dental fees, regardless of what is occurring in the United States. If there were to be one criterion for assessing whether the present level of dental fees is appropriate, it would have to be: Are the fees affordable to Canadians and do they still ensure that dentists' overhead is adequately covered? It should not be based on the fees that American dentists are billing.

*Joel Rosenbloom, DDS
Toronto, Ont.*

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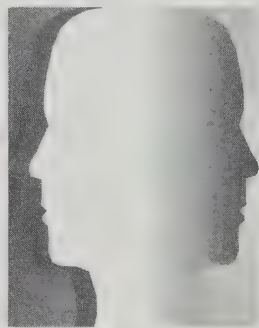
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The Long Love That in My Thought Doth Harbour: The First Year of Private Practice

Peter C. Fritz, B.Sc., DDS

© J Can Dent Assoc 1999; 65:97-8

Sir Thomas Wyatt was certainly not reflecting on a dental career when he wrote his famous poem in 1557. However, the advice dental students receive about what to expect in the first year of private practice seems to be as helpful as a sixteenth-century bloodletting (now called a "deep cleaning"). After finishing my first year in an associateship, I decided to compile a list of all the advice I would have liked to have had before starting out. I hope this helps new graduates, and I encourage other new dentists to share their insights as well.

1. Get professional help. Since in many dental schools there is more emphasis on the pudendal nerve than on practice management, you will need help. Get a team together consisting of an accountant, a banker, a lawyer, an insurance agent and a financial planner. You don't need to play your entire team right away, but it is good to have made contact with these people. They know that you are financially challenged in several respects, and will likely go out of their way for you when you start out. Besides, you

will undoubtedly be contacted by many of the aforementioned offering their services. This may become annoying after a while, but it is very useful if you have questions. The best way to find a team member is to ask established colleagues whom they would recommend.

2. Be practical. Don't buy the big car or house the day after you graduate. Having that third patient in a row cancel on you can be very frustrating. This frustration is compounded by worry if your payment on the new Lada is due. Remember that in dental school, a good day was one when you didn't lose or break any instruments. Chances are, living like a student wasn't that uncomfortable for you. Keep that attitude. You cannot justify warping into another lifestyle the day after you graduate.

3. Maintain perspective. It is difficult to anticipate how busy you will be in the first year of practice. However, as the first few months go by, one thing is certain: you will become much more efficient. You will have some very productive days and some less so. Even if you don't find a full-time associ-

ateship, don't worry. You still have an excellent part-time job. There is nothing wrong with watching a football game on Sunday afternoon and not having to worry about going to work the next day.

4. Use your down time to learn as much as you can. Mount some teeth in plaster and practice crown preparations, endodontic accesses, inlays and onlays (this works best if the teeth were previously extracted). Observe how the practice is run (note how much better you would do it if you were the ruler) and how the other dentists interact with the staff and the patients. Learn from this. Stay well-informed by reading the dental literature.

5. Keep excellent clinical records. Some experienced dentists may remember how much anesthetic they gave, what shade composite resin they used, and exactly what procedures were provided for a patient on February 3, 1984 — a Wednesday. I can remember the matrix proteins of mineralized tissue, but can't remember how many minutes there are in a unit. So I write everything down in the chart.

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6. Keep excellent financial records. Even if your office is computerized, make sure you keep a personal record of the patients you saw, the treatment rendered and the amount you billed. Keep this information in a binder at the office. It is very easy for your work to go "unnoticed" in a busy, inefficient office. Sit down with the office manager every three months (or with whoever keeps track of the financial matters) and compare numbers.

7. Realize that you will always be learning. The day after graduation, nothing really changes — you still don't know everything. Don't be afraid to ask the principal dentist for his or her advice on procedures and cases. I have heard many associate colleagues complain that they are seeing challenging patients and less challenging procedures. Put yourself in the principal dentist's position and you will quickly visualize yourself doing the same thing. This is a great opportunity to refine your

patient communication skills and develop greater proficiency in even simple tasks. Don't be embarrassed, however, to tell the principal dentist when you feel uncomfortable performing certain procedures for certain patients. Also, when in doubt, refer it back to the principal, or refer it out.

8. Patients put a lot of trust in you — don't disappoint them. Essentially, people are hiring you to look into their mouth so you can politely and honestly tell them what you see in an understandable way. Be professional.

9. Reflect on your success. ■

Dr. Fritz is pursuing a combined program in periodontology and a graduate program in oral biology at the University of Toronto. He also practices part-time in Burlington, Ont.

The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association.

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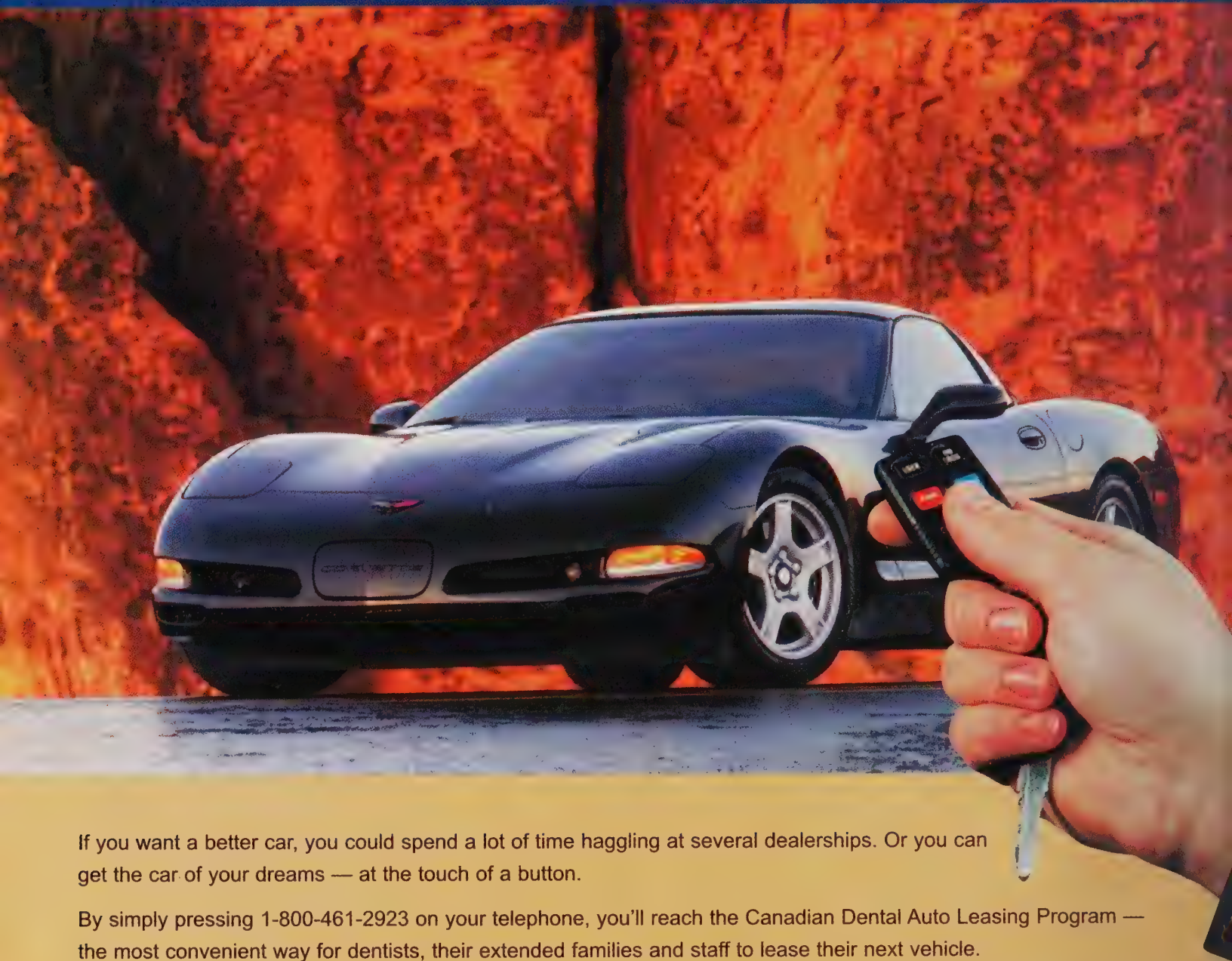
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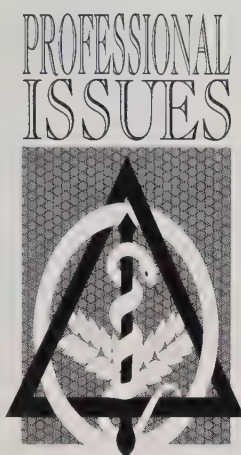
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Continuing Water Fluoridation in the City of Calgary, Alberta, 1997-1998

Catherine Pryce, RN, MN
Jackie Smorang, RDH, MEd.

ABSTRACT

The issue of water fluoridation has a long history in the City of Calgary (population 820,000). There were five plebiscites before 1998, with only the 1989 plebiscite receiving a majority vote in favour of fluoridation. Calgary introduced water fluoridation in 1991.

In the fall of 1997, the City sponsored a review of water fluoridation as a public policy based on information provided by a group of concerned citizens. An expert panel was formed to look at the new scientific information on the subject; four of the five members agreed that there was not sufficient evidence upon which to make substantial changes to the water fluoridation policy. Nevertheless, the City's Standing Policy Committee on Operations and Environment recommended that a plebiscite on water fluoridation be held in conjunction with the 1998 municipal election. This decision was ultimately supported by City Council.

Under the direction of the Calgary Regional Health Authority, the Fluoride Education Steering Committee undertook three strategies for the campaign: building partnerships, educating health professionals and educating the public. In spite of the anti-fluoridation activities, Calgarians voted 55 per cent in favour of continuing fluoridation of the municipal water supply.

MeSH Key Words: fluoridation; health policy; local government.

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The Expert Panel Review

In the fall of 1997, a small group of concerned citizens convinced City Council that there was new scientific evidence on the safety of fluoridation. In response, the City of Calgary Standing Policy Committee on Operations and Environment (SPC-O&E) and the Calgary Regional Health Authority (CRHA) agreed to sponsor a review of water fluoridation as a public policy. A panel of five experts was

appointed. Support was provided by the Waterworks Division and the CRHA.

Representatives on the panel were selected for their expertise in areas relevant to the science of fluoridation: bone health, pediatrics and community health, toxicology, environmental design and biostatistics. Scientific information was provided by the CRHA and by organizations and individuals opposed to water fluoridation. Information was also sought

through advertisements and was obtained through the efforts of the panel members. The review focused on work produced since the last plebiscite in 1989. The CRHA committed to following the recommendations of the panel and was therefore prepared to recommend removing fluoride from the water if the evidence warranted this conclusion.

The panel met a number of times between December 1997 and March 1998. Four members

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reached mutual agreement on the issues, but there were differences with the fifth member that could not be resolved; therefore, the report contained a dissenting section. However, the panel stated that the opinions of the members were "very close and the disagreements [were] largely form, emphasis and level of detail."¹

Four panel members agreed that there was not sufficient new scientific evidence upon which to base a recommendation for substantial changes to the water fluoridation policy in Calgary. The fifth member concluded that there was evidence supporting health concerns, but that the evidence was weak.

Responses of the CRHA and City Council

CRHA

On May 25, the CRHA Board endorsed the report of the Expert Panel on Water Fluoridation and reaffirmed its support for the fluoridation of municipal water supplies. The CRHA Board also directed management to take the necessary action to support the maintenance of water fluoridation in light of its safety, effectiveness, and low cost.

While unanimous recommendations from the panel would have been ideal, the CRHA believed that the review of this complex body of scientific evidence had been comprehensive and was confident that the majority recommendations should be supported by the CRHA and would be supported by the City. However, the existence of a minority report was a significant and persistent issue over the course of the next several months, particularly because the opinions expressed by the dissenting panel member became increasingly negative.

City of Calgary

The panel's recommendations were received by the Commissioner and sent to SPC-O&E along with Administration's recommendation that no plebiscite be held. In spite of these recommendations, letters and presentations, SPC-O&E made the recommenda-

tion to hold a plebiscite on the issue of fluoridation in conjunction with the 1998 municipal election. This decision was ultimately supported by Council.

While the decision of Council was unfortunate, it was an important turning point in the development of partnerships that would build the collective capacity to withstand the pressures of the upcoming months. Representatives from the CRHA, the Expert Panel, Alberta Blue Cross, the Alberta Dental Association, the Alberta Dental Hygienists' Association and the seniors and First Nations communities, along with individual dentists, demonstrated shared ownership of the issue and began to work as a team.

The Plebiscite

There were about three months to prepare for the municipal election. It was clearly going to be a much different public education campaign than the one conducted in 1989, which included five years of preparation and an extensive action plan. Due to time constraints, it was decided that all aspects of the CRHA campaign would be coordinated through a Fluoride Education Steering Committee that included representatives from relevant divisions within the CRHA.

The three strategies that were agreed to included building partnerships, educating health professionals and educating the public.

Building Partnerships

Work had already begun on identifying and communicating with stakeholders and experts across North America on the issue. Locally, a network of professionals who were concerned about the possible loss of water fluoridation had been emerging. Endorsements for water fluoridation were solicited from the Canadian Dental Association, the Alberta Dental Association, the Alberta Dental Hygienists' Association, Calgary & District Dental Society, the Department of General Pediatric Consultants and pedi-

FLUORIDATION

Nature thought of it first



Fig. 1: CRHA's primary message.

atric dentists at the Alberta Children's Hospital.

Educating Health Professionals

Even before the announcement of the plebiscite, contingency activities had begun to prepare for education initiatives. In January 1998, the CRHA began collecting the most current fluoride research documents for compiling in a fluoride reference manual. The manual took four months to complete and contained over 90 questions related to water fluoridation. It became the foundation for the education not only of health professionals, but of the public as well.

Inservice education sessions were presented to CRHA staff who would be involved in public education and health profession groups in the community.

Fluoridation articles and information sheets were included in newsletters targeting dentists, dental hygienists, physicians, dietitians and CRHA staff. Health professionals were also invited to use the CRHA Fluoride Information Line and the CRHA's fluoridation Web site and to read the expert panel report.

Educating the Public

In March of 1998, two focus groups were held with representatives of the general public to gain a better understanding of their beliefs and concerns related to

water fluoridation. The qualitative information obtained from the focus groups was used to refine the public education materials.

Print materials. The slogan "Fluoridation: Nature thought of it first" and the logo of a water drop were selected as part of the CRHA's primary message to the public to promote water fluoridation (**Fig. 1**). These were adapted from a campaign developed by the American Dental Association with their permission.

A pamphlet, a small poster, a large poster, stickers and information sheets for senior citizens were the print materials used to support public education. They were distributed to the public through CRHA district offices, dental clinics, hospitals, long-term care facilities and seniors' influenza vaccine clinics. Pamphlets and large posters were distributed at continuing education sessions attended by dentists, dental hygienists, dental assistants and pediatricians. These health professionals were encouraged to use the resources to promote water fluoridation in their workplaces.

The Fluoride Information Line. The Fluoride Information Line was created as an extension of the CRHA Information Line to answer any questions the public had about the fluoridation issue. The line was in operation from July to October 1998.

The fluoridation Web site. There was little accurate fluoride information on the Internet. A fluoride Web site was developed so that information would be available to the public and to CRHA staff. The site was set up in a question-and-answer format, and questions could also be submitted by e-mail to the Fluoride Information Line.

Social marketing campaign. The social marketing campaign ran for four weeks and began with a media launch on September 21. The messages incorporated into the campaign reinforced the natural theme used in the print materials and emphasized the safety, effectiveness and economy of

water fluoridation. The messages were on television, radio, newspaper and outdoor billboards.

Media coverage. Dr. Brent Friesen, Medical Officer of Health, was designated as the spokesperson on fluoridation for the CRHA. Scheduled news conferences during the campaign were well attended by television, radio and newspaper reporters. Dr. Friesen also responded to numerous requests for interviews and for participation in call-in shows throughout the campaign, often responding to information being distributed by those opposed to water fluoridation. Mid-way through the campaign, editorial board meetings were scheduled with the two newspapers to inform them more fully on the issue.

The CRHA participated in one public debate. Experience in this debate was similar to that reported in other jurisdictions during fluoride campaigns. The debate required a great deal of preparation, and the vast majority of people attending already held very firm opinions about the issue. A decision was made not to engage in any further public debates.

Anti-fluoridation Activities

There were two vocal anti-fluoridation groups active in Calgary during this period: the Health Action Network Society (HANS) and Calgarians for Choice. Indeed, HANS had started the process that led to the plebiscite: On May 7, 1997, HANS had presented a request to Council to hold a fluoridation plebiscite during the next municipal election.

Importing "Experts"

HANS brought three well-known opponents of water fluoridation to Calgary: Dr. John Colquhoun of New Zealand, Dr. John Lee of California and Dr. Richard Foulkes of British Columbia. Dr. Foulkes presented to City Council in July. Dr. Colquhoun spoke to the media and presented at a public information session in

August. Dr. Lee held a press conference and attempted to engage the CRHA in a public debate just before the election. Their impact on the campaign was perceived to be minimal because of poor timing (July and August). In addition, the material discussed by the three individuals consisted of arguments and claims familiar to the health community.

Media Coverage

The anti-fluoridation groups were successful in attracting media attention throughout the campaign. There were guest editorials printed in the two newspapers and numerous letters to the editor. Columns on fluoridation always contained allegations of negative health effects caused by water fluoridation. There is no doubt that this coverage raised concerns and confusion about the benefits of water fluoridation among the population. The anti-fluoridation groups were able to receive the majority of coverage in many of the newspaper articles. In addition, a few paid advertisements were inserted in newspapers urging voters to vote "no" to fluoridation.

The launch of the CRHA social marketing campaign was accompanied by a loud reaction from the groups opposed to fluoridation. They expressed outrage that CRHA was spending taxpayers' dollars to promote only one side of the issue, picketed the location of the news conference and attempted to disrupt it.

Print Materials

HANS distributed a pamphlet that included misinformation, statistical manipulations, innuendoes and quotes taken out of context. These pamphlets were circulated widely throughout the city.

The main focus of their information was that fluoride is a hazardous toxic waste that causes harmful health effects. Each allegation presented in their print materials was investigated by CRHA staff, and a 13-page report was written refuting the claims. A



portion of this report was published in a point-counterpoint column of the newspaper.

Legal Action

In mid-September a small group of individuals opposed to water fluoridation attempted, unsuccessfully, to file an injunction against the CRHA to stop all public education activities.

Conclusions

Calgarians voted 55 per cent in favour of continuing fluoridation of the municipal water supply. To prevent the occurrence of a future fluoridation plebiscite, CRHA should regularly review the fluoride research and promote the benefits of water fluoridation. There will be continued challenges by those who oppose water fluoridation, and CRHA must remain committed to this recognized public health measure.

Further information and details about the CRHA's experience can be obtained by e-mail at cathy.pryce@crha-health.ab.ca or by phone at (403) 209-8484. ■

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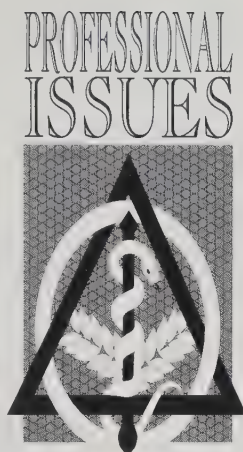
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The Development of ISO 9002 Quality Management Standards for Canadian Dental Practices

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ABSTRACT

The department of dentistry of the Hospital for Sick Children has actively maintained a quality assurance system since the early 1980s. In addition, members of the department have taught courses and published articles on risk management and quality assurance for over a decade. The decision to achieve ISO 9002 registration led to an intensive 10-month process to adapt ISO systems and standards to Canadian institutional dental practice. This article describes the ISO registration system and the changes required for an existing quality assurance program to conform to ISO standards.

MeSH Key Words: dental care/standards; practice management, dental/standards; process assessment (health care).

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Introduction

Even though dentistry is a profession, the practice of dentistry is viewed by business and government as part of the health care industry. Dental practice consists of two components, products and services, that are subject to clinical and practice standards respectively. Since health care in Canada is a provincial matter, the dental college of each province determines the clinical standards that regulate dental products such as restorations and dental surgery, as well as clinical outcomes. In the absence of specific clinical standards, disputed dental outcomes are judged against the current teachings and policies of North American faculties of dentistry. Professional colleges, whose mandate it is to pro-

tect the public from inferior products and services, have well-established systems for evaluating complaints and disciplining their members.

Practice standards, on the other hand, are not only regulated by dental colleges, but by a wide variety of governmental and legal agencies. Processes that are part of daily practice, such as infection control, record keeping, radiation protection and management of hazardous materials, are all subject to standards that have nothing to do with the success of a restoration or a dentist's surgical abilities. Furthermore, numerous practice standards come from legislation or common law, which overrides the mandate of professional colleges. In Ontario, for instance, radiation protection is determined by the

Healing Arts Radiation Protection Act (HARP).¹ This legislation stems from the Ontario government, not the Royal College of Dental Surgeons of Ontario (RCDS(O)). Within the framework of this legislation, the Ministry of Health may send inspectors to do site visits of any dental practice to determine if the specific requirements of the act are being met.

Record keeping is another area where multiple bodies are involved in the determination of practice standards. Although the RCDS(O) has been empowered by government to ensure that the record-keeping requirements of the *Dentistry Act* are met, any dental record used in a court case will be judged by the standard required for hospital record keeping, which is determined by com-

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Fig. 1: Initial training session showing dental department staff completing questionnaire on material just presented by consultant.



Fig. 2: ISO 9002 logo attesting that a practice has been audited by SGS International Certification Services Canada Inc.

mon law.² Dental colleges often assist their members by interpreting and recommending changes to record keeping and passing this information on through directives.

The dental staff of teaching and research hospitals must also satisfy other regulatory bodies. For instance, hospital service and residency training programs are accredited by the Commission on Dental Accreditation of Canada, and all human research projects are reviewed and approved by the Research Ethics Board of the hospital. In addition to these multiple regulatory and reporting requirements, the RCDS(O) will implement a random Practice Review of individual dentists in Ontario, which means that dentists — whether in a group dental practice, a hospital, or a public health or university clinic — may be evaluated in their primary workplace. Salaried dentists (full- or part-time) and associate dentists now have an increased stake in ensuring that their workplace meets the standards of infection control and radiation protection, and that their personal dental records meet the standards of their regulatory body. The onus is on each and every licensed dentist in the province to meet the standards of practice described in the Practice Review documentation.

Staff of the department of dentistry of the Hospital for Sick Children have been involved in quality assurance and risk management as clinicians, authors and teachers for over a decade. The department of dentistry provides 24-hour dental emergency service as well as

ambulatory clinic treatment for patients referred by dentists and dental specialists throughout Canada. Annual clinical visits number almost 20,000. As a teaching and research centre affiliated with the University of Toronto, the department is also a clinical training site for the specialties of pediatric dentistry, orthodontics, oral and maxillofacial surgery, and endodontics. The size and diversity of this operation requires systems to help maintain consistency yet provide quality service and education. Our dental service and residency programs have consistently been rated highly when reviewed by the Commission on Dental Accreditation of Canada or by the Canadian Council on Health Services Accreditation. However, the impending Practice Review program of the RCDS(O) stimulated our desire to consolidate our core practice standards. We determined that we needed a process to ensure that our practice standards were continuously maintained and ready for review. Although much of the infrastructure was in place, we found that the organization and consolidation of records was incomplete.

First ISO Dental Practice in North America

The announcement that a private dental practice in Ontario had been the first in North America to become registered to the ISO 9002 standard provided the opportunity to pursue a similar status for our institution-based dental clinic.³⁻⁵ The ISO standard of quality management is recog-

nized and consistent throughout the world. ISO 9002 registration confirms that standards established by a dental college or by an individual dentist are continually maintained and can be proven to be so. Small service companies ranging from private pathology laboratories to real estate agencies and car dealerships have increasingly sought ISO 9002 registration.⁶ This status ensures their clients that systems are in place for providing consistent, high-quality service, and that these systems are regularly audited by external personnel.

ISO Dental Practices in Britain

In 1995, the British Dental Association (BDA) published an Advice Sheet describing the ISO 9002 system.⁷ ISO 9002 was identified as a means of systematically defining and verifying working methods (practice standards) to ensure quality patient care and the best use of available resources. According to the BDA Advice Sheet, getting started may involve production of an office manual by the dentist/practice personnel, utilization of a consultation service or, if already well organized, employment of a certification body to inform members of the practice where their system falls short of acceptance for registration. Certification bodies cannot provide consultation services but can identify items that are non-compliant with the ISO system. The BDA provided their members with a list of consultants with dental experience, a list of certification bodies for ISO

dental registration, and guidelines on the use of ISO 9002.

Process Development and Adaptation for an Institutional Setting

We chose to work with ISODOC, a consultation service company that includes Dr. Robin M. Conway, the pioneer in North American ISO dental registration.⁸ The authors determined that adaptation of ISO 9002 standards to dental practice was significantly different in solo, group and institutional situations. Dr. Conway had previously developed a group practice model for an ISO 9002 management system that met or exceeded the requirements of the RCDS(O) Practice Review.³ The authors subsequently developed the institutional management system so that the full range of dental practice situations are now eligible for ISO 9002 registration.

In a hospital, it is necessary to secure executive approval before proceeding with the development of standards. In our case, the project was approved and supported by the President and CEO of the Hospital for Sick Children. Departmental funds were then allocated for the project, and grant support sought.

Once the decision was made to proceed, all staff attended a training session that explained ISO 9002 and the registration process. In addition, departmental staff were identified to work directly with the consultant. Since the hospital staff consists of full- and part-time dentists, hygienists and assistants, as well as full-time secretarial staff, it was necessary to hold two training sessions, one during regular hours (**Fig. 1**) and one at the quarterly meeting of the dental staff. After the initial meeting, a training schedule and individualized plan was established and the process begun. Policies and procedures were systematically reviewed and revised, internal reviewers were trained and staff brought up to date on the changes. ISODOC consultants met monthly with staff during production of the manual, and progress was dis-

played on a staff bulletin board reserved for ISO news.

The centrepiece of the process is a control document, the ISO Manual, that contains three tiers of documentation. Tier one deals with policy, tier two with procedures and tier three with process. Some ISO requirements are surprising but make perfect sense. For instance, in addition to ensuring that dental clinic radiographic equipment meets the required standard, the company that tests the equipment must provide calibration records of its testing equipment. The company that monitors radiographic equipment must prove its ability to perform the tests accurately, or lose the contract.

Differences between private and institutional practice meant that some standards had to be adapted. For example, one of the prime features of ISO 9002 standards is that they ensure price comparison for purchasing, which is designed to reduce costs for the clinician. In hospitals, however, this function is assumed by a multi-institution purchasing consortium. In our case, departmental standards were altered to focus on early delivery, receipt of the correct order and its verification upon arrival at the clinic. Unlike private practices, the department of dentistry has portions of its equipment sterilized in a centralized hospital facility as well as in the dental clinic. This too required the development of innovative protocols. The investigation and documentation of processes in the dental clinic identified duplication of effort, reporting discrepancies between staff members, and time-consuming practices that were outdated and could be eliminated. The pre-registration process provided us with the opportunity to streamline current practices for the benefit of all staff, and ultimately, our patients. In addition, preparation for registration allowed us to implement clear guidelines identifying staff accountability. In some cases, appropriate guidelines were already in place but were either partially implemented or ignored until a system for review and

reporting of variances (infractions) was established.

Following completion of the manual, an internal review was performed to ensure all systems were operating as described. The manual was submitted for review by the non-dental external auditors, SGS International Certification Services Canada Inc., who identified some inconsistencies requiring change or clarification. Subsequently, at a predetermined date, an auditor spent one and one-half days in the dental clinic reviewing each item in the manual against a larger body of documentation that included the RCDS(O) *Dentaguide*, original documentation of the *Dentistry Act 1991*, and HARP and Workplace Hazardous Materials Information System (WHMIS) regulations.^{1,2,9,10} The auditor identified some additional areas of nonconformity with the manual, and following adjustment of those procedures, the department of dentistry received its ISO 9002 registration in December 1998, becoming the first dental clinic to achieve ISO registration in North America. Continued registration is subject to monthly internal audits that are reviewed every six months by an external auditor. This allows for early detection of incorrectly calibrated equipment, missed signatures on records, lost items, and failed maintenance schedules. It is this aspect of ISO 9002 that ensures rapid feedback to correct discrepancies and maintain standards.

The Benefits of Registration

Service companies that are ISO-registered benefit from public confidence in the International Organization for Standardization. Numerous companies either seek out or require suppliers to be registered within the ISO 9000 series. In Canada, over 5,000 companies are registered, including General Motors and Quebecor; more than 3,200 are located in Ontario. Directly or indirectly, these companies involve over one million Canadians in their ISO processes. This means that a significant seg-

ment of the population has strong brand recognition for ISO and is keenly aware that a dental clinic or practice with ISO 9002 certification will provide them with the safety and security that comes with adhering to regulations and practice standards.

We undertook the development of standards for institutional dental practice to ensure consistency in a very large service, teaching and research unit with an ever-changing complement of personnel. We treat almost 20,000 outpatients annually, have a dental and support staff of 34 persons, plus six residents/fellows and numerous dental specialists in graduate training programs. ISO 9002 registration is a sign to our hospital administration, the Ministry of Health, the University of Toronto, private insurance carriers and our patients that the systems which support our dental service and teaching program are both appropriate and consistently maintained by a review process. ISO 9002 does not deal with how each staff dentist diagnoses or treats patients. However, having systems in place that are less likely to fail reduces unexpected events and complaints that directly affect patient care. An additional benefit is the maintenance of consistent staff and graduate student training in a unit with a large annual turnover, which helps reduce costs incurred through wastage or mistakes due to a lack of understanding.

Dentists in group or solo private practice will benefit from a separate set of features of ISO 9002 registration. An ISO-registered practice can display the sign of a value-added practice, the ISO 9002 registration seal from SGS International Certification Services Canada Inc. (Fig. 2). Registration can also have a direct positive effect on the sale of a practice, notify the public that ISO standards are maintained, and send a message to potential partners or associates that this practice is a leader in health care. Employees of ISO-registered companies demonstrate brand recognition through their own ISO activi-

ties and comprise a niche market of over one million potential patients who would be attracted to an ISO-registered dental practice. Patients who are wary of x-rays or concerned about cross-contamination will take comfort in the additional surveillance guaranteed by ISO standards. As for ISO-registered clinicians, in addition to the peace of mind that comes from having their office ready for Practice Review, they can practice dentistry knowing their support systems are operating as planned and are reviewed regularly to ensure consistency despite changes in staff, suppliers and materials. ■

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Dr. Conway is president of ISODOC. Drs. Kenny and Johnston have no declared financial interest.

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CLINICAL PRACTICE



Porcelain Veneers: a Challenging Case

Daniel J.J. Fortin, DMD, MS

ABSTRACT

A patient in his early 20s with teeth badly discoloured by tetracycline was seeking treatment to improve his esthetics. Because retreatment and cost were important considerations, porcelain veneers were the treatment of choice. The challenge in this case was to mask the underlying tetracycline stain before the final cementation and thus gain more control over the final shade of the veneers.

MeSH Key Words: case report; dental porcelain; dental veneers; tooth discoloration/therapy.

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The Challenge

A young patient with badly discoloured teeth was seeking treatment to improve his esthetics (**Fig. 1**). His perception of his appearance had an important influence on his self-confidence. Retreatment and biological cost were important considerations. The patient was in his early 20s.

Teeth may be discoloured as a result of tetracycline intake during a prophylactic or therapeutic regimen in the pregnant female or in the infant.

Tetracycline and similar antibiotics have a selective affinity for deposition in bone and tooth substance.¹

The portion of the tooth stained by tetracycline is determined by the stage of tooth development at the time of drug administration. The discoloration itself depends upon the dosage, the length of time over which administration occurred and the type of tetracycline. The teeth

affected by tetracycline appear to have a yellowish or brownish-grey discoloration, which is most pronounced at the time of eruption of the teeth. This discoloration gradually becomes more brownish after exposure to light.²

Possible Solutions

Bleaching

Success in bleaching varies depending on the individual and the etiology of the discoloration. Bleaching vital teeth is a safe procedure, but results are variable and hard to predict, especially for teeth showing tetracycline banding as in this case.³

Porcelain Fused to Metal Crowns

Because of the darkness of the stains in this case, coverage with porcelain fused to metal crowns would have been an acceptable treatment plan. However, porcelain veneers, which have a lower biological cost, were selected as the treatment of choice.

Porcelain Veneers

Typical indications for veneers include teeth that are malformed, rotated or malpositioned. Veneers may also be used to close single or multiple diastemas to change the colour of unattractive teeth, to restore abraded or eroded restorations or to cover and replace faulty restorations. Other factors such as stain etiology, occlusion and the age, health and oral hygiene of the patient are important considerations in the treatment plan.

Masking tetracycline stains is one of the ultimate tests for porcelain veneers. It is difficult to mask dark underlying tooth colour and retain a natural appearance of the veneers. A very important factor in successfully covering these stains is the area of each tooth that is affected. Staining of the incisal third or the middle third of the teeth is relatively easy to cover. Staining of the gingival third is a difficult situation for veneers. The



Fig. 1: Teeth badly discoloured by tetracycline (pre-operation).



Fig. 2: Lateral reduction of 0.5 to 0.75 mm.



Fig. 3: Incisal edge is reduced by 1.5 mm with a lingual chamfer.



Fig. 4: Class V type preparations are cut in dentin in the stained area.

challenge in this case was to mask the underlying tetracycline stain before the final cementation, which enabled more control over the final shade of the veneers.

Some operators prefer to etch the tooth and apply the veneer directly over the entire untouched facial surface, thereby not removing any enamel. Several problems exist with such a method. The reversibility of these veneers may seem desirable, but the esthetic results and physiological contours are not always optimal. In fact, restorations are usually over-contoured and gingival inflammation may be observed. The removal of some enamel before placing a veneer is recommended to achieve ideal esthetic and physiological results. A clear finish line and specific surface reductions will facilitate laboratory fabrication and cementation.

Teeth that have been stained by tetracycline are more difficult to mask with veneers, especially

when the cervical areas are badly discoloured. This complex problem requires a specific approach. The preparation should be conservative. It should allow space for a coverage of 0.5 mm to 0.75 mm of porcelain. Any area of the tooth that is visually accessible should be covered by porcelain. If the defect does not extend subgingivally, the margin of the veneer should remain above the gum line. Veneer margins will blend with the gingival enamel and impression making will be easier.

Incisal reduction is an important factor in the long-term fracture resistance of veneers.⁴ The incisal edge is reduced by 1.5 mm and a lingual chamfer is prepared (Figs. 2 and 3). This chamfer exposes porcelain to compression instead of shearing during the initial phase of protrusive movement, and as long as forces are against the tooth (compressed porcelain), fracture resistance is high.

This procedure confines all the peripheral marginal areas within enamel to ensure adequate sealing by normal bonding procedures. Final preparations should be as smooth as possible to improve accuracy of impressions and laboratory procedures. When a person smiles or talks, the six maxillary anterior teeth are usually the most noticeable; however, maxillary first premolars and mandibular incisor are also included if there is an esthetic problem.

Generally, veneers do not penetrate into dentin. But in this case it was necessary to go deeper than just enamel, because the tetracycline banding was in the middle third of the teeth and would show through any type of opaque veneer.

As seen in this case (Fig. 2), the tooth appears darker as enamel is removed and the underlying stained dentin is exposed. To optimize the esthetic outcome, the tetracycline band needs to be opacified before cementation, or



Fig. 5: Opacification of the stain.



Fig. 6: Opacification of the stain.



Fig. 7: Immediately following surgery, after cementation of upper veneers.



Fig. 8: Upper and lower teeth immediately following surgery.

the opaquesness necessary in the porcelain to camouflage the stain will result in teeth with considerably less vitality. To cover the dark portion stained by the antibiotic, Class V type preparations were cut in dentin in the stained areas (Fig. 4), thereby removing most of the dark pigmentation responsible for the coloration. Adhesion of composite resin was achieved with a newer generation bonding system that relies on the formation of a hybrid layer to seal the exposed dentin. To maximize the opacification of the stain, a light opaque stiff composite resin was used as a restoration material (Figs. 5 and 6). Most of the darker stains are not visible anymore and should not interfere with the final colour of the veneer.

A light retraction was achieved with surgical silk. Final impressions and occlusal records were taken. The shade selection was made as if the veneers were to be on teeth of normal colour. When returned

from the laboratory, the veneers were tried for fit and colour matching. No shade modification was necessary, and an untinted shade of composite cement was used for final cementation (Figs. 7 and 8).

The proper selection and manipulation of materials provide the clinician with enhanced control and predictability of esthetic restorations. In certain situations, porcelain veneers can be considered an esthetic option for severely discoloured teeth. ■

Dr. Fortin is director of clinical research with Dentsply/Caulk.

Reprint requests to: Dr. D. Fortin, Dentsply/Caulk, L.D. Caulk Division, 38 West Clarke Ave., P.O. Box 359, Milford, Delaware 19963-0359, USA.

References

1. Urist MR, Ibsen HK. Chemical reactivity of mineralized tissue with oxytetracycline. *Arch Pathol* 1963; 76:484.

2. Shafer WG, Hine MK, Levy BM. A textbook of oral pathology, 4th ed. Philadelphia: W.B. Saunders Co.; 1983.

3. Haywood VB, Leonard RH, Dickinson GL. Efficacy of six months of nightguard vital bleaching of tetracycline-stained teeth. *J Esthet Dent* 1997; 9:13-9.

4. Garber DA. Porcelain laminate veneers: ten years later. Part 1: tooth preparation. *J Esthet Dent* 1993; 5:56-62.

CDA RESOURCE CENTRE

CDA members can borrow books or videos on veneers by contacting the CDA Resource Centre at:

Tel.: 1-800-267-6354 (ext. 2223),

Fax: (613) 523-6574,

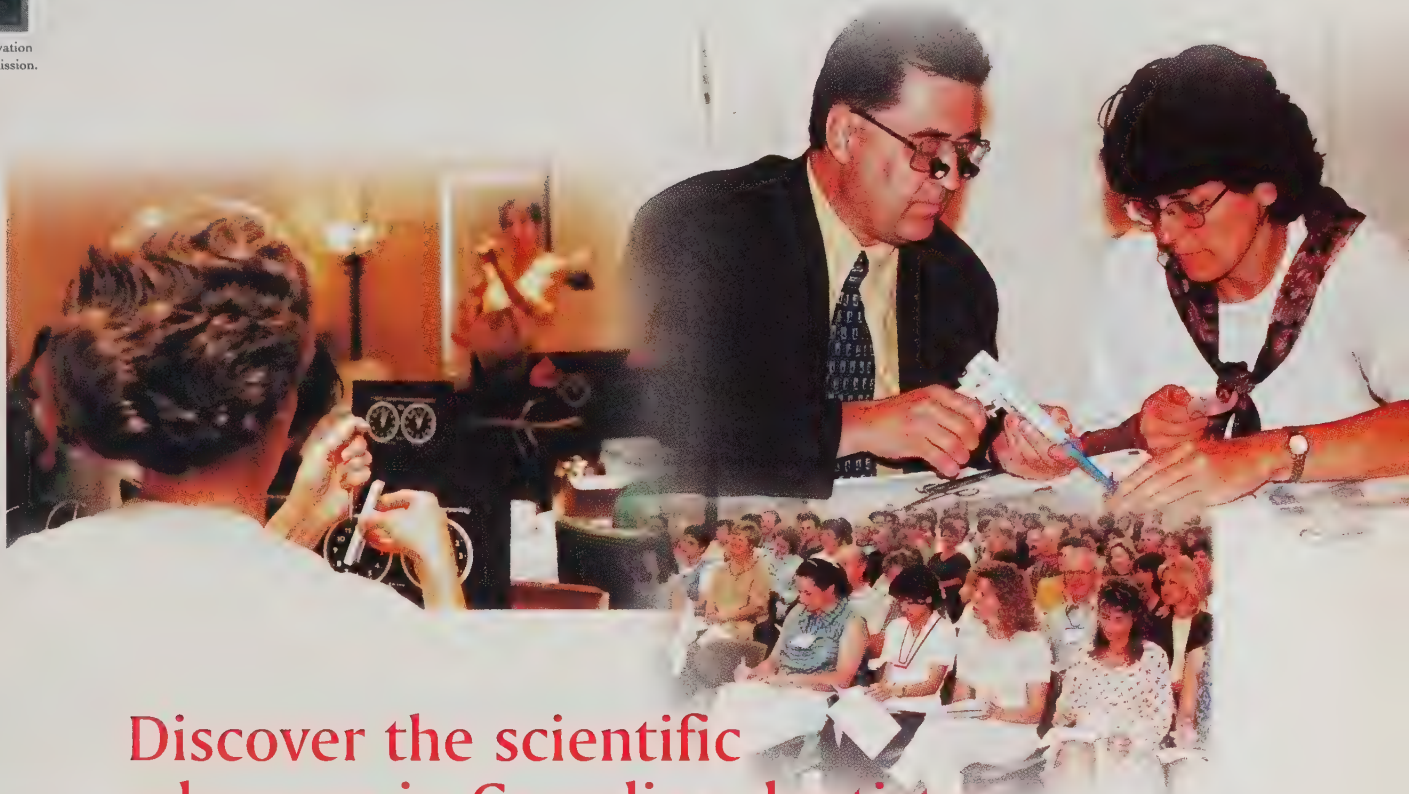
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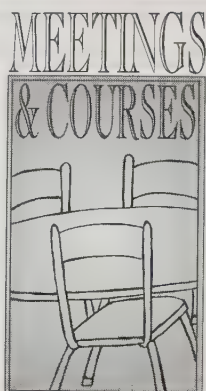
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Book your flight with Canadian Airlines and mention the code 01850 to obtain convention rates.



INTERNATIONAL



March 6-13

15e Forum de l'Association internationale francophone pour la formation continue en odontologie (AIFCO), en Guadeloupe, avec la collaboration de la Faculté de médecine dentaire de l'Université Laval, Québec. Contact: Dr. Christian Bernard, Faculté de médecine dentaire, Université Laval, Québec. Tel.: (418) 656-5018; fax: (418) 656-2720; or e-mail: ruth.turcotte@fmd.ulaval.ca

March 20-27

43rd International Alpine Dental Conference in Courchevel, France. Contact Marie-Ange Vitry, International Dental Foundation, 53 Sloane St., London SW1X 9SW, U.K. Tel.: 44 (0) 171 235-0788; or fax: 44 (0) 171 235-0767.

April 21-24

Irish Dental Association Annual Scientific Conference in Cork City, Ireland. Contact Margaret Ferguson, Irish Dental Association, 10 Richview Office Park, Clonskeagh Road, Dublin 14, Ireland. Tel.: 011 353 1 2830499; or fax: 011 353 1 2830515.

CANADA



March 10

Symposium on Orofacial Pain — From Basic Science To Clinical Management at the Simon Fraser Univer-

sity, in Vancouver, BC. Contact Lucille Gendron by fax: (514) 343-2233; or e-mail: gendrol@medent.umontreal.ca

March 17-20

Western Canada Dental Society Curling Bonspiel and Seminar in Edmonton, Alta. Contact Dr. Rick Brisbane, 304-8225 105 St., Edmonton AB T6E 4H2. Tel.: (403) 439-6037; or fax: (403) 439-0145.

April 31 and May 1

Meeting of the Southern Ontario Surgical Orthodontic Study Group in Windsor, Ont. Contact Dr. Jeff Berger by tel.: (519) 258-2632; by fax: (613) 258-2637; or e-mail: jberger@mnsi.net

May 1

Class Reunion of U of T '69 in Toronto, Ont. Held in conjunction with the ODA Convention. Contact Peter Brymer at (416) 964-1337.

U.S.A.



March 4-6

14th Annual Meeting of the Academy of Osseointegration in Palm Springs, Calif. Contact the Academy Headquarters, 401 North Michigan Ave., Chicago IL 60611-4267. Tel.: (312) 321-5169; or fax: (312) 321-5150; or by e-mail: academy@osseo.org

April 23-26

Minnesota Dental Association's Star of the North Meeting in Saint Paul, Minn. Contact the Star of the North Meeting, 2236 Marshall Ave., Saint Paul MI 55104. Tel.: (651) 646-7454; or fax: (651) 646-8246; or by e-mail: mndental@mn.uswest.net

DENTAL MEETINGS



March 26-27

CDA Board Of Governors Interim Meeting in Ottawa, Ont. Contact

Ms. Ruth Beaulieu Tel.: (613) 523-1770, ext. 2273; or 1-800-267-6354.

April 29 - May 1

Ontario Dental Association 132nd Annual Spring Meeting in Toronto, Ont. Contact Ms. Diana Thorneycroft. Tel.: (416) 922-4162, ext. 346; fax: (416) 922-9005; or e-mail: pdasm@oda.on.ca

May 25-30

93rd Annual General Meeting of the Alberta Dental Association in Jasper, Alta. Contact Dr. E.W. McIntyre. Tel.: (403) 484-1336; or fax: (403) 489-4930.

May 27-29

Prince Edward Island Dental Association Annual Meeting in Woodstock, P.E.I. Tel./Fax: (902) 892-4470.

May 29 - June 2

28e Congrès annuel de l'Ordre des dentistes du Québec in Montreal, Que. Contact Mrs. Nicole Pagé. Tel.: (514) 875-8511; or fax: (514) 393-9248.

June 4-5

New Brunswick Dental Society Annual Meeting in Saint John, N.B. Contact Mrs. Barb Wishart. Tel.: (506) 452-8575; or fax: (506) 452-1872.

June 19-20

Nova Scotia Dental Association Annual Meeting in Pictou, N.S. Contact Mr. Steve Jennex. Tel.: (902) 420-0088; or fax: (902) 423-6537.

Notices of meetings and continuing education courses are published without charge for appropriate **not-for-profit** dental organizations, teaching facilities or recognized study clubs. Information must be received two months prior to the expected publication date, and will be published at the discretion of the editor. Send all requests c/o Ms. Rachel Galipeau, *Journal* editorial assistant, Canadian Dental Association, 1815 Alta Vista Dr., Ottawa, ON K1G 3Y6.

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Aggressive Equity Fund (Altamira)	-16.3%	8.8%	n/a	n/a	✓
Common Stock Fund (Altamira)	4.9%	6.2%	5.3%	8.0%	✓
Canadian Equity Fund (Trimark) ^{†1}	-2.4%	7.7%	7.4%	10.3%	✓
Special Equity Fund (KBSH) ^{†2}	-1.6%	29.8%	22.1%	n/a	✓
TSE 35 Index Fund (Sun Life of Canada) ^{††}	-0.5%	14.1%	12.2%	9.5%	✓
CDA INTERNATIONAL GROWTH FUNDS					
Emerging Markets Fund (KBSH)	-17.7%	-16.5%	n/a	n/a	✓
European Fund (KBSH)	39.2%	25.4%	n/a	n/a	✓
International Equity Fund (KBSH)	24.8%	11.0%	n/a	n/a	✓
Pacific Basin Fund (KBSH)	14.3%	3.0%	n/a	n/a	✓
US Equity Fund (KBSH) ^{†3}	27.4%	24.2%	20.0%	18.6%	✓
Global Fund (Trimark) ^{†4}	9.4%	12.5%	13.9%	16.0%	✓
Global Stock Fund (Templeton) ^{†5}	8.8%	n/a	n/a	n/a	✓
S&P 500 Index Fund (Sun Life of Canada) ^{††}	36.8%	32.7%	27.1%	21.5%	✓
CDA INCOME FUNDS					
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Fixed Income Fund (McLean Budden) ^{†6}	8.5%	10.1%	8.7%	10.9%	✓
CDA CASH AND EQUIVALENT FUND					
Money Market Fund (Canagex)	4.5%	3.9%	4.7%	6.9%	✓
CDA GROWTH AND INCOME FUNDS					
Balanced Fund (KBSH)	6.2%	11.6%	9.4%	10.1%	✓
Balanced Fund NR (KBSH) ^{†††}	n/a	n/a	n/a	n/a	
Ethical Balanced Pooled Fund (Ethical Funds) ^{††††}	-0.3%	12.0%	9.9%	n/a	✓

CDA figures indicate annual compound rate of return. All fees have been deducted. As a result, performance results may differ from those published by the fund managers. CDA figures are historical rates based on past performance and are not necessarily indicative of future performance.

[†] Returns shown are those for the following funds in which CDA funds invest: ¹Trimark Canadian Fund, ²KBSH Special Equity Fund, ³KBSH US Equity Fund, ⁴Trimark Fund, ⁵Templeton Global Stock Trust Fund, ⁶McLean Budden Fixed Income Fund.

^{††} Returns shown are the total returns for the indexes tracked by these funds.

^{†††} Introduced in September 1998.

^{††††} The CDA Ethical Balanced Pooled Fund invests in a fund that mirrors the Ethical Balanced Fund (Ethical Funds).

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ALBERTA - Southern: Centrally located in a small community within 1 hour of Calgary city limits. Grossing upwards of \$400,000 with 1,300 active patients in three operatories with pan. This family practice has a great deal of untapped potential. Ideal location to raise a family. Contact: Marie Aisthorpe, tel. (403) 640-1422, (800) 661-1254, voice mail #216, e-mail craigais@agt.net D417

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cost-share practice. Contact: Marie Aisthorpe, tel. (403) 640-1422, (800) 661-1254, voice mail #216, e-mail craigais@agt.net D421

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ALBERTA - Calgary: For sale - 1/3 interest in group practice of three general dentists. Partner returning to graduate school. Well-established practice in the northwest, recently relocated into a new facility. Growing patient base and great net income. Excellent opportunity. Call in evenings, (403) 241-3499. D401

ALBERTA - Grande Prairie area: Excellent opportunity to purchase a successful, established dental practice. Owner wishes to return to university. Willing to provide the time and assistance for a smooth transition. This is an opportunity worth looking into. For detailed information, including photos, please reply by faxing your name and phone number to (403) 988-6843. D391

ALBERTA - Southern: Active dental practice for sale. Three operatories plus hygiene room. Ideal location with well-established clientele. Will assist in transition. Send all replies to: CDA Classified Box # 2766. D396

ALBERTA - West Central: Three-operator, computerized, well-established solo practice for sale due to illness. 1,100 sq. ft. Gross approximately \$400,000. Very low overhead. Quick transaction appreciated. Call (403) 782-2637. Fax (403) 483-2173, email lind@telusplanet.net D398

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BRITISH COLUMBIA - Penticton: Busy family practice for sale - located in strip mall in Penticton. Existing dentist would like to stay on as partner or part-time associate. Fax (250) 493-1986 or tel. (250) 493-0020. D353

NEWFOUNDLAND - Corner Brook:

Established solo family practice, 2,500 plus patient base. Sale or associateship leading to sale. Three operatories (one hygiene). Computerized with efficient recall system. High gross, low overhead situation. For further information contact: Bill Tingley, tel (800) 565-1502 NB/NS/PEI/Nfld., or (902) 835-1103 in Halifax and enquiries outside toll-free area. D394

ONTARIO - Toronto: For sale, Toronto office condo in full-service medical building. Approximately 850 sq. ft. at Bloor and Sherbourne. On subway, fifth floor, great view, huge windows, very bright. Two entrances to suite. Two parking spaces (staff) in parking lot. Tel. (416) 921-2700, fax (416) 921-3353. D412

ONTARIO - Northwestern: Established practice for sale in northwestern Ontario. Three operatories (one hygiene), full-time hygienist, computerized, panoramic x-ray, intraoral camera. Gross over \$400,000; 2,600 active patients. Professional appraisal available. Excellent recreational facilities. Easy drive to major city. Vendor willing to assist in transition. Reply to: CDA Classified Box # 2764. D389

ONTARIO - Kingston: Ultra-modern general practice for sale. Main thoroughfare exposure. All new equipment. Two operatories plus one plumbed. Computerized intraoral camera with ceiling-mounted TVs. Excellent staff. Great potential for growth. Community is rich in culture and recreational activities. Owner pursuing graduate studies. Tel. (613) 389-2031 (evgs.). D378

SASKATCHEWAN - Moose Jaw: Excellent opportunity. Dentist retiring from well-established, three-man practice. Willing to associate for smooth transition. Presently working a 4-day week with hygienist and therapist. Seeing 35+ new patients per month and grossed \$630,000+ in 1997. Enthusiastic and fun staff. Computerized office with five operatories in a 14-operatory space. Ultra-modern equipment with intraoral camera, air abrasion unit, cephalometric and panoramic X-rays. Beautiful new office located in prime area of Moose Jaw, Saskatchewan. Population 35,000. Rural drawing area of 80,000. Contact: R. Tessier, DDS, tel. (306) 692-6438 or (306) 692-8221, fax (306) 692-3177, e-mail MJ241@focalpt.net D405

SASKATCHEWAN - Central: Well-established (15+ years), busy, modern, rural general practice for sale. Three operatories and a private office. Only dentist in town with a large drawing area. Opportunity to practise all types of dentistry; 1,000+ active patients, most with dental insurance. Town is close to Saskatoon and Regina. Owner retiring. Priced to sell. Reply to: CDA Classified Box # 2762. D383

Positions Available

ALBERTA - South Edmonton: Doctor associate. Part-time position available. South Edmonton. Monday and Wednesday evenings, 3 - 9 and alternate Saturdays, 9 - 5. Please call (403) 436-7048 or (403) 450-1639. Calls are strictly confidential. D411

ALBERTA - Banff: Associateship. Enjoy all that the Canadian Rockies have to offer! Modern dental clinic, involved in all phases of dentistry, is seeking an associate for full-time practice, with possible evolution to cost-sharing partnership. Reply in confidence to: Judy Mitchell, c/o Drs. Gosnell and Aurora, PO Box 1839, Banff, AB T0L 0C0 or fax to (403) 762-8095. D424

BRITISH COLUMBIA - Kelowna: Associate required to start with part-time hours Thursday, Friday, Saturday. Buy-in an option. Five operatories, pan-ceph, Reveal camera system, Dentrax computer system in operatory. Lots of high-tech goodies. Please call after 6 pm B.C. time, (250) 764-7541 or fax to (250) 764-7521 or e-mail michelle_boyd@bc.sympatico.ca D410

BRITISH COLUMBIA - Central Vancouver: Very busy oral and maxillofacial surgery practice is seeking an associate/partner. New facility, excellent staff, three hospitals including trauma coverage for a nearby 447-bed, acute care facility. Please reply in confidence to: CDA Classified Box # 2757. D360

BRITISH COLUMBIA - Kelowna: Opportunity for associate with a view to purchase. Established, productive practice, great location, new equipment, computerized (Byte). Fun staff and pleasant environment. Tel. (250) 764-8509 (res.); PO Box 29104, Okanagan Mission, Kelowna, BC V1W 4A7 D304

MANITOBA - Oakbank: Part-time associate wanted for modern, rapidly growing practice. This attractive office is located 20 minutes from Winnipeg, in a rapidly growing family oriented town. Successful candidate must be highly motivated, caring, gentle and like working with children. A minimum of 2 years experience is required. Tel. (204) 989-2231, please leave message. D278

MANITOBA - Swan River: Associate wanted with view to purchase within 1 - 2 years. Well-established, busy general practice in west-central farming community. Five operatories, 4-day work week, long-standing friendly staff. Approximately 30 new patients monthly. Call (204) 734-4756 or (204) 734-2371, after 6 p.m. D288

NORTHWEST TERRITORIES - Yellowknife: Canadian licensed dentists. Full-time associate position available in Yellowknife.

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NORTHWEST TERRITORIES - Yellowknife: Canadian certified dental associate required for a modern family dental practice with pleasant support staff. The clinic is located in the city of Yellowknife. Seeking a caring motivated individual interested in a long-term position. Please reply to: CDA Classified Box # 2705. D012

ONTARIO - Hamilton Mountain: Part-time associate required for progressive group practice. This position involves evening and weekend hours and will lead to full time/partnership for the right candidate. Please forward resume to: Mountain Mall Dental Office, 673 Upper James St., Unit 46, Hamilton, ON L9C 5R9 or call Shirley at (905) 387-4780. D362

ONTARIO - Ottawa: Busy Ottawa practice requires a part-time periodontist to provide periodontal care 1 to 2 days per week. Send resume to: PO Box 74166, 35 Beechwood Ave., Ottawa, ON K1M 2H9. D379

QUÉBEC: Recherche orthodontiste désirant oeuvrer en région pour une période pouvant atteindre 2 à 3 jours/semaine, où selon disponibilité. Faire parvenir votre CV à la boîte réponse de l'ADC # 2765. D390

QUEBEC - Montreal: Oral and maxillofacial surgery associate for well-established, solo, bilingual practice. Progression to buy in and role reversal anticipated for the right individual who is skilled, personable, and who considers patient care a priority. Confidential reply to: CDA Classified Box #2744. D261

SASKATCHEWAN - Wadena: Community located east central is seeking the services of a full-time dentist to complement existing health services. Progressive community with excellent amenities to raise a family. Incentives available to the right individual. Interested individuals are urged to call (888) 338-2145, fax (306) 338-3804, e-mail toffice@wsd.inet.wadena.sk.ca D413

BERMUDA: Wanted, left-handed locum for dental practice in Bermuda, Apr. 26 - May 25, 1999. Practice located in front yard of residence. Tel. (441) 236-5298, fax (441) 236-0666. D384

Positions Sought

CANADA: Female 1992 University of Toronto graduate available for short-term locum positions from January 1999 to June 15, 1999. Experienced in all aspects of dentistry and available to work anywhere in Canada. Contact: Reva, tel (323) 465-4472. D414



HEAD, SECTION OF COMMUNITY DENTISTRY

Applications are invited for a full-time, tenure track faculty position as Head, Section of Community Dentistry at the rank of Assistant/Associate Professor effective July 1, 1999, subject to final budget approval. Responsibilities will include didactic teaching in the undergraduate and graduate programs, administration and development of the faculty's major extra-mural programs and undertaking, as well as supervising research.

Applicants should have a dental degree which permits licensure in Manitoba and an advanced degree in community dentistry/public health dentistry (PhD preferred) is required. Salary and rank will be commensurate with qualifications and experience. A 1-day-per-week practice privilege is available.

The University of Manitoba encourages applications from qualified women and men, including members of visible minorities, Aboriginal peoples and persons with disabilities. This advertisement is directed to Canadian citizens and permanent residents.

Applicants should send a curriculum vitae and have three letters of reference sent to:

Dr. David Singer
Faculty of Dentistry
University of Manitoba
780 Bannatyne Avenue
Winnipeg, MB R3E 0W2
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The closing date for applications is March 1, 1999.

D408

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D407



HEAD, SECTION OF ORAL AND MAXILLOFACIAL SURGERY

Applications are invited for a full-time, tenure track faculty position as Head, Section of Oral and Maxillofacial Surgery at the rank of Associate Professor or Professor effective July 1, 1999, subject to final budget approval. Responsibilities will include (a) administration and teaching in the undergraduate and graduate programs, with emphasis on the Graduate Oral and Maxillofacial Surgery Program, as Director, (b) undertaking scholarly activity, and (c) service.

Applicants must be eligible for licensure and registration as a specialist oral and maxillofacial surgeon in the province of Manitoba, must possess or be eligible for the fellowship of the Royal College of Dentists of Canada in oral and maxillofacial surgery, and have suitable clinical, administrative and academic experience. An advanced degree is desirable. Salary and rank will be commensurate with qualifications and experience.

The University of Manitoba encourages applications from qualified women and men, including members of visible minorities, Aboriginal peoples and persons with disabilities. This advertisement is directed to Canadian citizens and permanent residents.

Applicants should send a curriculum vitae and have three letters of reference sent to:

Dr. David Singer
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University of Manitoba
780 Bannatyne Avenue
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D409

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Please forward resume: **c/o Susan Affleck, Town of Rainy River, Rainy River, ON P0W 1L0, fax (807) 852-3553, tel. (807) 852-1254, e-mail rainyr@fort-frances.lakeheadu.ca**

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D403

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Journal

Vol. 65, No. 3 • March • 1999



The Changing Face of Dentistry

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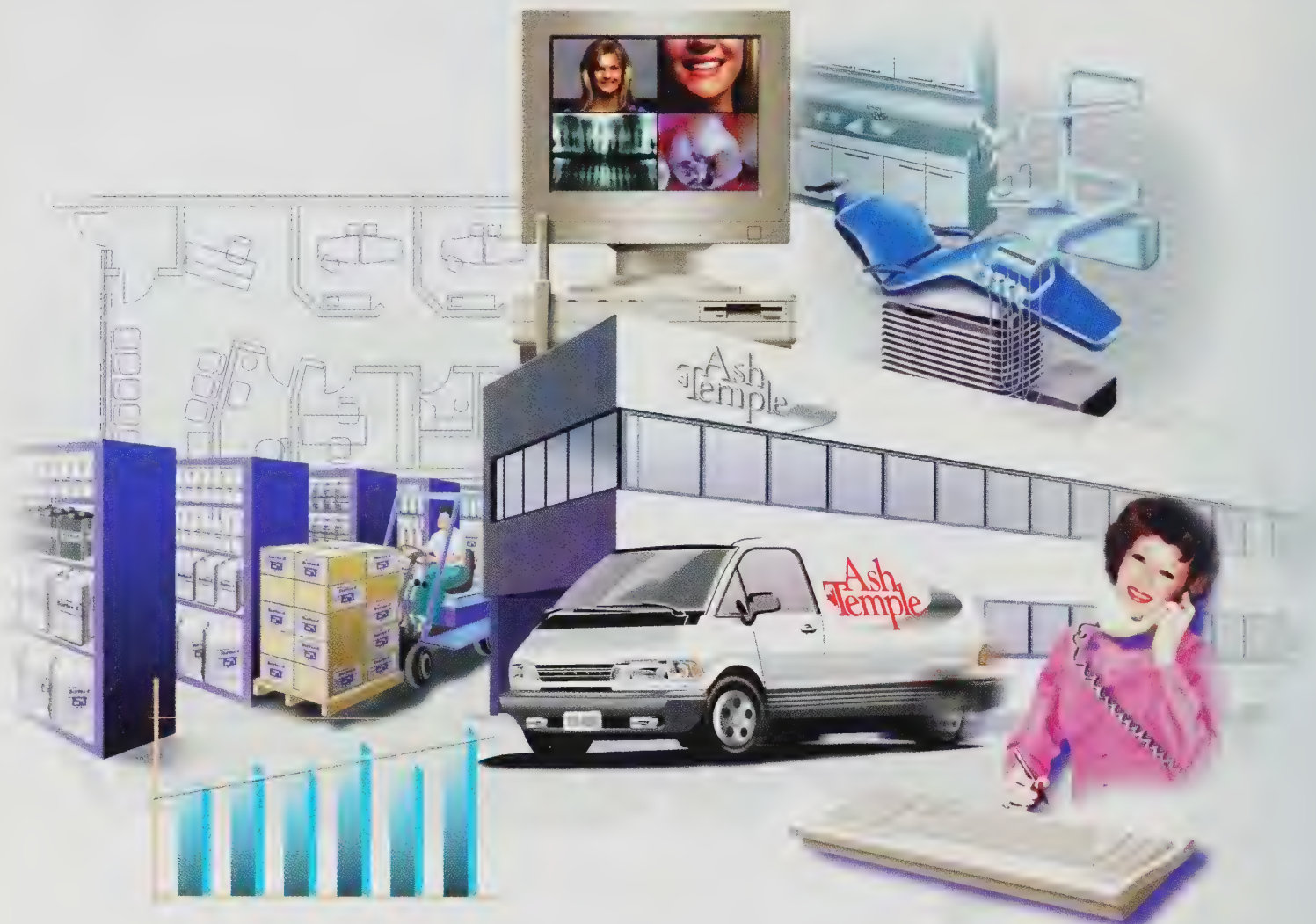
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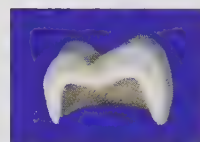


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Wagner WC, Chu TM; University of Michigan (JPD 1996; 76: 140-4)

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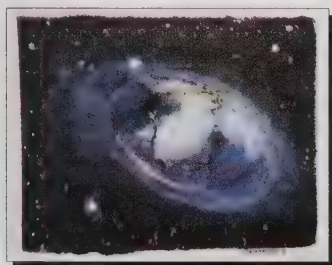
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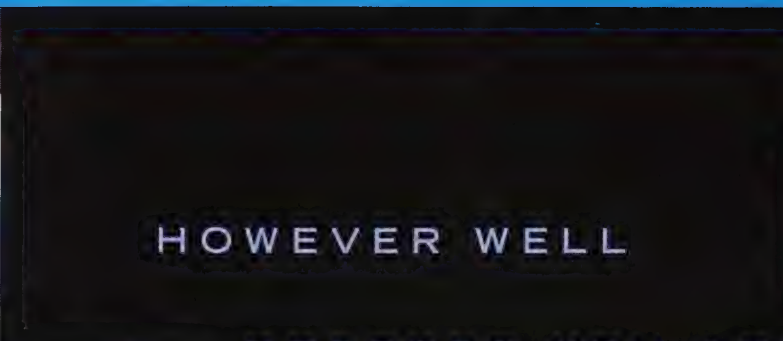
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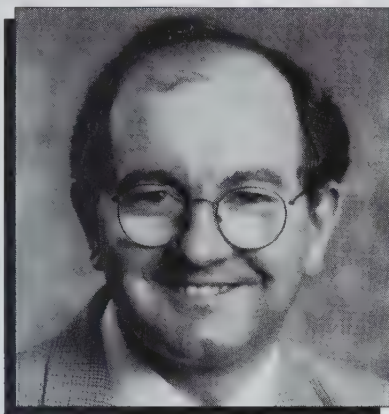


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EDITORIAL

CREATING THE WINNING CONDITIONS



Dr. John P. O'Keefe

Over the past few months, I have been attempting to position the *Journal* as a publication with a distinct purpose and tone. I would like to explain the thinking behind the changes I have introduced, and invite submissions of material for the *Journal*.

The Purpose of the *Journal*

According to my vision, the *Journal* is primarily an educational publication which helps the Canadian dental profession to continue developing responsibly, with the public interest at heart. I want any "non-dentist" reading the *Journal* to recognize that our profession is concerned with science-based clinical practice and encourages discussion about the major issues (e.g. legal, ethical, regulatory, demographic) facing the profession.

Conversely, I see *Communiqué* as a publication that deals with the "private interests" of member dentists. It is a news vehicle that informs members of the activities of CDA and the provincial dental associations. It is also devoted to reporting on matters pertaining to the "business side" of dentistry. According to this vision, practice management and personal business issues are dealt with in *Communiqué*.

A Call for Material

The *Journal* currently consists of various "departments" and four main sections: *Applied Research*, *Clinical Practice*, *Professional Issues* and *Debate*. The purpose of the first two sections is to provide information that will help Canadian dentists make science-based clinical decisions. The latter two sections serve the purpose of presenting and discussing the major issues facing the profession (and the individual practitioner) in a changing environment of practice.

Applied Research

I invite original submissions from "clinician scientists" reporting the findings of clinical research projects. I am particularly interested in papers that evaluate dental materials, devices and procedures. Submitted papers must be shorter than 2,500 words in length and must be pertinent to clinical decision making. The expected format is that set out by the *International Committee of Medical Journal Editors*.

Clinical Practice

This section publishes papers in various formats related to the practice of clinical dentistry. The idea underpinning this section is that papers should provide evidence-based solutions to clinical problems. I invite practitioners to send me questions related to clinical problems; I will then seek answers to these problems from recognized Canadian experts. Clinicians (academics, specialists, or general practitioners) may submit review articles, case reports, topic updates, or creative solutions to clinical problems they have encountered in practice. The length of papers should not exceed 2,500 words; however, I prefer shorter papers.

Professional Issues

The environment in which our profession is practiced is changing at dizzying speed.

Dental regulatory authorities are obliged by government to devise new measures to ensure public protection. New ethical questions arise

regularly. Demographics, technology and disease patterns are changing. Consumerism and a culture of individual rights place new pressures on practitioners.

Dental schools are under pressure to "do more with less." Other occupational groups seek to extend their scope of practice.

Despite these changes, we have an ethical obligation to act as responsible professionals.

This section of the *Journal* aims to help the dental practitioner understand and adapt to the changing professional environment. I invite articles, less than 2,500 words in length, that propose solutions to the problems posed by the changes in our professional environment.

Debate

This section provides a forum for the expression of opinions by people with an interest in the promotion of optimum oral health in Canada. These opinions are meant to provoke discussion about issues related to oral health. These opinions may be provocative, even iconoclastic, yet they are put forward in the sincere hope of promoting new ways of examining issues facing the dental profession. Debate pieces should be no longer than 1,200 words.

Conclusion

For the *Journal* to survive and develop we need a number of "winning conditions" (to borrow a topical metaphor) to come together:

- a clear purpose for publishing;
- a publication that meets the needs of readers, authors and advertisers (if possible!);
- dedicated involvement by many people as writers, reviewers and constructive critics.

I would like to hear from people who wish to help me with this daunting task. I particularly seek individuals who are qualified to act as consultants for the various sections of the *Journal*.

John O'Keefe
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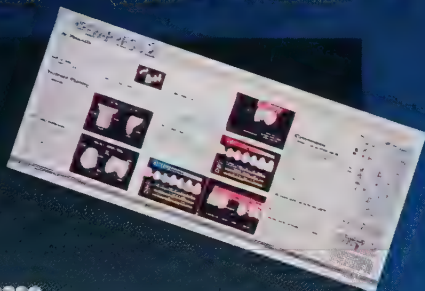
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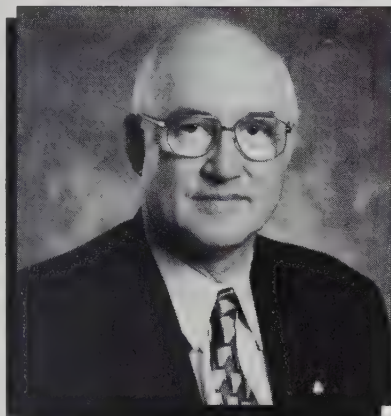
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Dr. Richard D. Sandilands

Regular readers of the *Journal* are probably familiar with recent articles discussing the education of dentists with respect to geriatric patients. There have also been appeals for dentistry to get involved in dealing with the growing percentage of our population approaching the age of 65. I will add my views to this important discussion, and throw out the challenge to you, the dental professionals of Canada, to respond.

The issues are complex, and I make no pretence of having magical solutions. I believe, however, that some information needs to be brought to light before attempting to formulate a concrete program designed to effect long-term solutions.

The world's population is rapidly aging. Over the next few years, the average lifespan worldwide will increase by almost 20 years. At the same time the proportion of older persons, defined by the United Nations as 60 years and over, will increase from one in 14 to one in four. In recognition of this significant demographic trend, the United Nations General Assembly has designated 1999 the International Year of Older Persons (IYOP). The purpose of the

IYOP is to foster international awareness of the importance of seniors' roles in society and the need for intergenerational respect and support.

There is a significant amount of data on the percentage of Canadians who fall in the category of senior, as well as tell-tale statistics as to what will happen over the next twenty years. Canada's senior population is among the fastest growing in the world. Currently, our seniors make up 12 per cent of the population; by the year 2041, they will comprise 23 per cent of the total population. This rapid demographic shift will considerably impact on families and communities and will, in fact, alter the economic, social and cultural fabric of our country.

Given this reality, the question we must ask ourselves is obvious: What roles and responsibilities should organized dentistry — CDA and the provincial dental associations — and individual dental professionals seek to establish in order to provide the ideal working solutions to the problems surrounding dental treatment for older persons?

In my opinion, there are several distinct groups of "older persons" that need to be taken into consideration in any discussion of a strategy relating to oral health care. Healthy older persons have similar needs as the general population in that, aside from the age factor and some additional medication requirements, oral health care may be provided in a normal setting. It is a fact that seniors have an interest in maintaining good oral health and in keeping their dentition healthy.

I believe that the emphasis on oral health care for seniors needs to be directed to those older persons who, for whatever reason, find themselves unable to access oral health care, or are medically compromised. These are the patients who are "falling through the cracks," as it were. The trend is to keep seniors in their homes as

long as possible, and provide home care assistance as required. Home care workers provide general aid to these older persons, but often the oral health needs of this group are unmet. To my knowledge, very little is done by institutions responsible for the care of older persons to provide facilities for oral health care.

If dental professionals choose to ignore the increasing urgency of this situation, we can be assured there are other groups within the health care field who will quickly step in — with the support of government — to provide care to these older persons. We have traditionally been taught to provide care within the confines of our offices; perhaps it is time to consider stepping out to provide services to those patients unable to come to us.

The solutions to this problem must be carefully researched and implemented, and the foundation for the delivery of services needs to be based on the education of both oral health care providers and seniors.

Provincial dental associations and even regulatory authorities would be well advised to initiate communication with provincial health authorities and seniors' councils. There are opportunities for all levels of dentistry to play an important role in the future of this process. Programs and models of delivery of oral health care are essential, and will need to be integrated within the existing health service programs for seniors.

CDA's role could be as the national coordinating body for the provincial dental associations. As well, the collaboration of CDA with seniors' health councils in developing a national program for the oral health care of older persons would be an ideal opportunity to exhibit the spirit of partnership and cooperation described in CDA's vision for the year 2010.

*Richard D. Sandilands, DDS
President of the Canadian Dental Association*

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LETTERS



Editor's Comment

The Journal welcomes letters from readers about topics that are relevant to the dental profession. The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association. Letters should ideally be no longer than 300 words. If what you want to say can't fit into 300 words, please consider writing a piece for our "Debate" section.

Doing the Right Thing

I like to drive fairly quickly, and I admit that on occasion, I drive faster than I should. Like others travelling a little over the speed limit, I tend to suddenly slow down when I spot a white car with lights on top. It is amazing how the possibility of being caught speeding will reduce the odds of actually engaging in that behaviour. The consequences of being stopped by police, charged and fined are weighed quickly as we drive down the road. Inevitably, the vast majority of us slow down and obey the law.

In our everyday life, there are many moral and ethical questions we deal with as we try to be "good" citizens. I am convinced that moral persuasion, proper upbringing and peer pressure are what keep the majority of the population out of jail. But what do we do with those who don't care for these standards or who have different value systems? There is always going to be a percentage of the population which, when left to its own devices, will misbehave. I guess that's why rather than having a real "self-regulated" society that

relies on all people being basically good, we have well-defined rules of behaviour acceptable to the majority, as well as a judicial system comprising both investigative and prosecutory arms to protect us from the "bad guys."

Forgive my real world analogy to point out the aspect of dentistry I want to highlight. The policing side of our profession — investigating and catching the "bad guys" — is being sadly neglected. Some dentists are getting away with "dental murder." Arguably, it may reach the point where we will lose our right to self-governance. It is only a matter of time before the government appoints someone else to do the dirty work for us. The continued acceptance of blatant misstatements in dental claims, for example, must stop. Hiding behind such rhetoric as "show us the proof," and "file a complaint," will eventually no longer do. It seems the only self-regulating we do these days is initiated by outsiders.

It is shameful to be privy to examples of the avarice and malpractice of my fellow practitioners, and to be hesitant about trying to change things because of the legal responsibility it entails and the belief that it really isn't my job. Dentists who are proud to be called professionals will have to establish more stringent mechanisms and protocols for dealing with those I prefer to think of as aberrations and embarrassments to us all. There should be a symbolic hanging of sorts to relay the message that those in leadership positions will not tolerate any more abuse of the system or of patients because it ruins all our reputations.

In most provinces, medicine and law have in place a "peer" review mechanism for assessments and evaluations of treatment protocols and outcomes. Those of us who are trying to "do the right thing" have nothing to fear from any group willing to take the time to validate our actions.

Those who are outside the norm, however, will be identified and dealt with in the proper manner. It doesn't do us any good to shirk our responsibility for protecting both the patients we serve and the good name of the doctors in our profession. Someone had better start before "Big Brother" finds out and does it for us.

Brian D. Barrett, DDS
Charlottetown, PEI

Advertising Claims

Like all of us, I know that when something sounds too good to be true, it is. Nevertheless, when a brochure arrived on my desk offering to teach me painless local anesthetic techniques, I couldn't resist.

"Painless every injection" said the brochure. The word "painless" was used seven times in two pages! I sent them my \$1,000 for a 10-hour course and flew to Toronto where the sponsoring dentist demonstrated his techniques on me and other dentists. Guess what? There was some pain. My friend in Thunder Bay gives me a more comfortable injection than the master! So buyer beware. When you read advertisements, ask yourself if the claims made are in accordance with what your own experience and common sense tells you.

Robert T. Sare, DDS
Thunder Bay, Ont.

I have been around for a while, and I am appalled at the change I have seen in the marketing strategy of dental materials and equipment companies over the last 10 years.

It used to be that new materials and equipment were thoroughly researched before being marketed to dentists. Now the strategy is to invent some new technique, send a "press release" to the evening newscast, make sure the public sees it, and then use the "panic" mentality to sell it to dentists ("Your patients expect it, doctor."). However, some of the claims or



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inferences made regarding these techniques have *no* basis in fact.

I would like to see every dental school in Canada increase its teaching of "intelligent shopping." Emphasis on evidence-based decision making and on smart evaluation of research would better equip the graduating professional to be an able "B.S." critic. Since the dental industry seems to have adopted the new market-based philosophy rather than the time-tested, research-first model, we need professionals who can decide for themselves what is worthwhile and what is merely for the company's shareholders.

The bottom line is that our patients do *not* expect us to be experimenting on them. If the research hasn't been done "in-house," I'm sure as heck not going to do it for them.

*Peter Neilson, DDS
Lasalle, Ont.*

Who Sets the Rules on Brushing?

As a retired certified pedodontist, I find it very difficult to understand why the powers that be cannot come up with some better and more precise recommendations with regard to tooth brushing. Why just twice a day? It would be preferable to suggest immediately after meals — even Crest does that.

Some thought should also be given to the problem of fluorosis resulting from the ingestion of fluorides in toothpaste by small children who love to eat the paste. Colgate recommends their product for adults and children over 12. Crest says that children under 6 years of age should only use a pea-sized amount, and be supervised while brushing. All these warnings are of course in fine print — something very few people read.

I really believe that some effort should be made to produce some more appropriate publicity with respect to these problems.

*Harold Helm, B.Sc., DDS
Saltspring Island, BC*

Dr. Benoit Soucy's Response

Thank you for your letter regarding tooth brushing and the problem of ingestion of fluoride by small children. The surveillance of these issues is part of the mandate of two CDA committees — the Consumer Product Recognition Committee (CPR) and the Committee on Community and Institutional Dentistry (CID).

CDA's actions towards the prevention of fluorosis have resulted in the reduction of the size of the swirl of toothpaste on promotional materials by manufacturers of CDA-recognized products, and the introduction of the fine print warnings that you noticed on some toothpaste packages. These are good initial results. As a follow-up we intend to investigate, with Health Canada, the need for mandatory warnings. Both the CID and CPR committees are involved in a global review of CDA's positions on fluoride. The goal of this process is to consolidate the various statements into one document entitled "Considerations on the use of fluorides in dentistry," which will better underscore the need to evaluate the total exposure to fluoride as well as its responsible promotion and use.

The standard recommendation of brushing twice a day is based on the time required for dental plaque to reorganize after it has been disturbed by thorough brushing and flossing. This recommendation is not under review at this point, but your letter will be placed on the agenda of the next meeting of the CID committee for discussion.

Maintaining the currency of our positions is a very important activity of CDA. We thank you for bringing these issues to our attention.

*Benoit Soucy, DMD, M.Sc.
Manager, Professional Services*

Polishing

One of the controversies starting to simmer in dentistry is whether or not regular polishing is beneficial, and whether we should spot polish or discontinue polishing entirely. In my opinion, this

debate stems from the fact that, as a collective, dentistry has a guilty conscience.

Dentistry used to be about prevention and elimination of oral pain. Each treatment had a concrete justification, the benefits of which were readily apparent. Now it seems that whenever our actions do not result in an immediate physical improvement, we question the value of our services. Reflection and re-evaluation are constructive and should never cease. However, we may be guilty of being too hard on ourselves. What is wrong with activities where the benefits are mostly esthetic and psychological?

Many activities in life are purely optional, yet we willingly choose to pay for them. Large numbers of people choose to have their cars washed, their clothes dry-cleaned or get manicures. These activities are hardly necessary yet the people working in these industries are not thought of as con artists or crooks.

Let's assume for a moment that there is no physical benefit to polishing. Let's assume that the gingival stimulation supplies no appreciable benefit, and that the near complete disruption of plaque colonies is insignificant. We are still left with some undeniable benefits, not the least of which is that patients like the way their teeth look and feel after a complete polishing. This may not be a physical benefit, but it is still a valid reason to provide a service. We are not, nor should we be, forcing our patients to consent to a polish. However, when patients choose to seek a polish for their own reasons, we should provide the service happily and without guilt. If we decided to spot polish or eliminate the polish altogether, most patients would react with, "Wait a minute. You didn't finish my cleaning."

I believe that polishing has other benefits, including allowing patients to experience how clean their teeth can look and feel. It gives them a goal to aim for with their home care. If they never had a really clean mouth, they may not

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WILLIAM DICKERSON, DDS (Las Vegas, NV)

"Targis/Vectris is a revolutionary material that provides me with the opportunity to eliminate metal from my practice in most situations."



THOMAS TRINKNER, DDS (Columbia, SC)

"The Targis/Vectris system is the missing link to marrying function, form and esthetics while staying conservative with tooth reduction. We owe it to our patients to provide leading edge dentistry with state-of-the-art materials like Targis/Vectris."



KEN A. NEUMAN, DDS (Vancouver, BC)

"This is the first time I have inserted a three unit bridge and patients comment on how much the bridge feels like their own teeth. I have heard, "nice", "very smooth" but never before "just like my own teeth."



DAVID HORNBOOK, DMD (San Diego, CA)

"Fiber-reinforced resins will change dentistry forever. Targis/Vectris, with its high flexural strength and excellent esthetics will make as much of an impact on the way dentistry is practiced as dental bonding did in the early 90's. The only thing limiting the uses and applications of this material is the imagination."



RONALD D. JACKSON, DDS (Middleburg, VA)

"The Targis/Vectris system continues to expand the "Esthetic Revolution". Its broad versatility, including bonded or cemented metal free crowns and up to three unit bridges, has added another dimension to my practice."



ANDREW SHANNON, DDS (Vancouver, BC)

"The Targis Vectris system has bridged the gap as a predictable conservative adjunct to conventional fixed prosthetics while still delivering form, function and esthetics."



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realize what they are missing. Let's not let a guilty conscience allow us to turn a blind eye to the non-physical benefits of tooth polishing. And let's not be too quick to eliminate polishing to the detriment of ourselves and our patients.

Sean Kelly, DMD
Coquitlam, BC

Practising Out of Province

I would like to add a very important point to the discussion on CDA membership that Dr. Sandilands did not mention in his column in the November issue of the *Journal* ("Getting It Straight" 1998; 64:677). I would like to see on the agenda of the national dental organization the mobility rights of dentists from one province to another.

I am a Canadian citizen and a graduate of McGill University. I wrote and passed the National Dental Board Exams. Yet, as of this day, I am not free to practise anywhere I choose in Canada even though I have the same qualifications as every dentist in any province to practise general dentistry, including the continuing education requirements.

What is CDA doing about the situation for its members? Surely this is a national problem affecting all Canadian dentists. It should be solved by the national association.

Mark Lazare, DDS, FAGD
Beaconsfield, Que.

Mr. Brian Henderson's Response

Dr. Lazare's expectation that qualified Canadian dentists should be able to practise in any Canadian province is reasonable. His suggestion that a national problem exists in this regard is also true. However, the expectation that "it should be solved by the national association" assumes that CDA has a great deal more power than it actually possesses.

CDA has encouraged national mobility and deserves credit for its initiatives considering its limited authority. I would offer the following information to illustrate the role CDA has played, and to clarify the general situation with respect to labour mobility in Canada. CDA became involved in the national accreditation process for educational programs with the express purpose of establishing national standards and facilitating the portability of qualified practitioners. CDA's Council on Education and Accreditation, and its succeeding organization, the Commission on Dental Accreditation of Canada, have cooperated with the National Dental Examining Board (NDEB) to establish this foundation, which is based on graduation from an accredited program in dental education and completion of the NDEB certifying examination.

The power to accept this foundation without imposing additional requirements on practitioners

lies with the individual dental regulatory authorities across Canada. They guard their responsibility for recognizing qualified practitioners carefully. And they have legitimate concerns for doing so. Regulatory authorities may choose, for example, to include in their assessment of practitioners moving from other provinces knowledge of provincial legislation or maintenance of continuing competence.

The problem of mobility is not unique to dentistry; the government of Canada has recognized the existence of a general labour mobility problem arising from the fact that 10 provincial jurisdictions may have 10 slightly varying approaches to the assessment of practitioners. With this in mind, an agreement was reached in 1994 between the federal and provincial governments to encourage internal portability of qualified practitioners and workers. The agreement is referred to as the Labour Mobility Chapter of the Agreement on Internal Trade (AIT).

Most recently, with the support of the CDA board of governors, the Commission on Dental Accreditation of Canada undertook to cooperate with the federal government in mounting workshops on labour mobility for dentistry, dental specialties, dental hygiene and dental assisting. The first of these workshops was held in Toronto in January, 1999. One or two more follow-up workshops will be held where recommendations will be framed to help each of these groups comply with the requirements of the AIT.

In short, CDA is acting responsibly to promote labour mobility and interprovincial cooperation. The situation is complex enough that the federal and provincial governments have recognized the need for a regulatory approach if voluntary approaches (such as the workshops referred to above) fail to identify solutions acceptable under the agreement.

Mr. Brian Henderson
Associate Executive Director and
Director, Commission on Dental
Accreditation of Canada

Canada, a society for all ages

1999



International Year of Older Persons 1999

Journal

March
1999
Vol. 65
No. 3

When You Need Medical Care Who'll Pick Up the Tab?

Hospital Cash and Travel Insurance from the Canadian Dentists' Insurance Program

Like you, more Canadians are picking up costs for medical treatment *on their own* due to provincial health care cuts. Bills that can easily reach thousands of dollars during a lengthy illness at home or in a medical emergency out of the province or country.

Fortunately, the Canadian Dentists' Insurance Program helps keep health care costs manageable for dental professionals and their families.

Hospital Cash Insurance pays you daily benefits when you're hospitalized for any reason and provides a lump sum on diagnosis of a serious illness such as cancer. Money you can use to improve your quality of care — or however you like.

Travel Insurance gives you emergency medical coverage out of the province or country *all year long* — for about the same amount competing plans charge for just a single trip. All covered medical expenses are paid directly for you — including costs for hospitalization, surgery, tests and prescription drugs. Flight accident, baggage loss and trip cancellation protection are also available.

To learn more about Hospital Cash or Travel Insurance right now, speak to a CDSPI service representative. Because when you're sick, the cost of care should be the last thing on your mind.

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NEWS UPDATE

Anesthetic Recalled

Novocol Pharmaceutical of Canada has voluntarily recalled two batches of injectable dental anesthetics, Isocaine 3% and Septanest N Injection, because of "regulatory questions regarding the company's compliance with and documentation for certain sterility testing."

Despite the fact that the affected lots were released more than six months ago, neither Health Canada nor CDA has received any confirmed reports of adverse reactions associated with these products.

The expert advice received by CDA indicates that any contamination to the products is probably bacterial and any potential danger would normally be neutralized by a patient's immune system within two weeks. In following the advice of dental regulatory authorities and Health Canada, dentists should give priority to contacting those patients recently exposed to the products and those who are at particular risk of contracting infections.

Directives from manufacturers should be taken as authoritative with respect to product use and recall, and followed in a practical and responsible fashion. ■

New Medical Devices Regulations and Fees in Place

New Medical Devices Regulations, setting out the requirements regarding the sale, importation and advertisement of medical devices have been in effect since July 1998. The regulations represent the culmination of an extensive review process that began more than seven years ago.

The regulations are overseen by the Therapeutic Products Program (TPP) and reflect Health Canada's decision to move towards a system of risk assessment and risk management. As a result, a risk-based classification system (Classes I, II, III, IV) was developed for medical devices, with Class I representing the lowest risk devices and Class IV the highest.

Dental products are classified as follows: Class I - toothbrushes,

reusable dental instruments, dental wax and floss, face masks; Class II - drill and other powered equipment, needles, x-ray films, gloves, dentures, orthodontic devices, wires; Class III - amalgam, dental cements, resins and posts; Class IV - no dental products (this class includes implants such as heart valves).

The system is based on adapting the regulatory requirements to the risk potential of devices. Products representing high risk must undergo increased pre-market scrutiny and post-market surveillance. These requirements do not affect Class I devices due to their low risk to patients. However, all device manufacturers will have to obtain an establishment licence attesting to their compliance with quality systems requirements (i.e.

audit and evaluation of plants) and ISO standards.

The regulations also reflect Health Canada's new mandate to expand its cost recovery initiatives. TPP has established a fee schedule to recover part of the cost associated with medical devices licensing. The schedule will be implemented gradually.

Fees for the examination of medical device licence applications became effective September 1, 1998, and will be followed by annual medical device licensing fees (November 1, 1999) and establishment licensing fees (January 1, 2000). A review of the cost recovery initiatives will be done in 1999 before the fees for medical device licences and establishment licences come into effect to examine the



"The Final Frontier"

Featured Artist: Dr. Jason Goldshlager

This month's featured artwork is a painting entitled "The Final Frontier" by Dr. Jason Goldshlager. A private general practitioner in Willowdale, Ont., he is a graduate from the University of Toronto's faculty of dentistry.

Dr. Goldshlager uses acrylic, pastel, charcoal and pencil in his artwork. His other interests include outdoor activities, reading and computers.

Prior to moving to Toronto, he practised in Sault Ste. Marie, Ont., for two years. The painting was composed in Sault Ste. Marie. ■

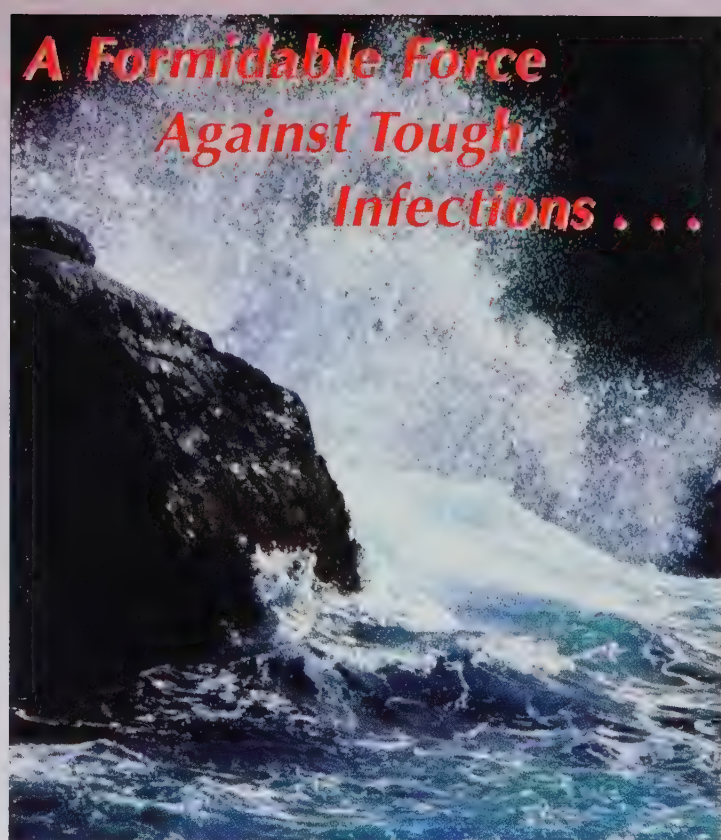
Dalacin® C Capsules

(Clindamycin hydrochloride)

50mg, 300mg

The recent edition of the Sanford Guide to Antimicrobial Therapy 1998 recommends Clindamycin as

The First Line Antibiotic for empirical therapy of Odontogenic Infections¹



**A Formidable Force
Against Tough
Infections . . .**

Empirical Antimicrobial Therapy on Clinical Grounds

Optimal antimicrobial therapy is based upon accurate diagnosis of indication & susceptibility testing indications of casual agents; these are only "INITIAL" guidelines)

Anatomic site / Diagnosis / Modifying Circumstances	Etiologies (usual)	Suggested Regimens+		Therapeutic Measures and Comments
		Primary*	Alternative++	
Odontogenic Infection	Oral microflora	Clindamycin 300mg q6h po	(AM/CL+++ 875/125mg bid or 500/125mg tid po) or erythromycin 500mg q6h po	+Surgical drainage and removal of necrotic tissue essential. β-Lactamase resistant organisms are increased in frequency.**

- Dosages suggested are for adults, with clinically severe (often life-threatening) infections. Dosage also assure normal renal function, and not severe hepatic dysfunction.

++ Alternative therapy includes these considerations: allergy, pharmacology/pharmacodynamics, compliance, local resistance profiles.

+++AM/CL = amoxicillin/clavulanate.

Adapted from Sanford Guide 1998

* Penicillin, which was the antibiotic of choice for a long time, induces the production of β -lactamase by certain anaerobes, specifically *Bacteroides*² species, and clinical failures have been increasingly reported in the literature.

** In Canada, most *Bacteroides* species are resistant to penicillin.

Dalacin®C capsule indicated in the treatment of serious infections due to sensitive anaerobic bacteria, such as *Bacteroides* species, peptostreptococcus, anaerobic streptococci, clostridium species and microaerophilic streptococci. Also indicated in serious infections due to sensitive gram-positive organisms (staphylococci, including penicillinase-producing staphylococci, streptococci and pneumococci) when the patient is intolerant of, or the organism is resistant to other appropriate antibiotics.

Dalacin®C capsule indicated for prophylaxis against α -hemolytic (viridan group) streptococci before dental, oral and upper respiratory tract surgery.

Most commonly reported side effects are diarrhea (2.6%) and vomiting (1.6%). For warnings please refer to the prescribing information.

Available on the following formularies:

50 mg capsule: all formularies. 300 mg capsule: Ontario, Quebec, British Columbia, Alberta, Saskatchewan, Manitoba, Nova Scotia, Newfoundland.

References:

Sanford J.P et al., The Sanford Guide to Antimicrobial Therapy (28th ed.) 1998:31

Zambrano et al., Clindamycin in the treatment of Human Infections, 1993; 10-21

Penicillin Product Monograph: CPS, 33rd edition, 1998

PRODUCT MONOGRAPH AVAILABLE UPON REQUEST

0077



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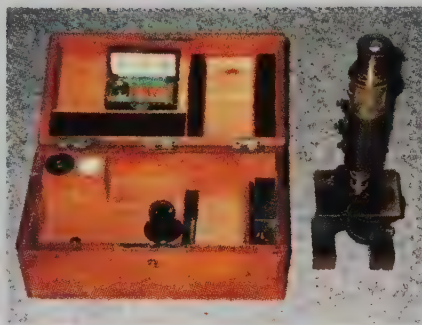
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WHAT'S IT?

This month's *What's It?* is not for identification but an opportunity for the Dentistry Canada Museum to proclaim that "what it is" is indeed a rare and valuable gift. Dr. F. Arnold Stevenson used this beautifully preserved microscope when he was a dental student at Harvard University in the late 1880s. Dr. Stevenson, who practised in Montreal from 1888 to 1928, was one of the outstanding dentists of his day. He was instrumental in the founding of the first dental school in Quebec, was a charter member of the Montreal Dental Club and, as president of the Quebec Dental Association, presided over the founding meeting of the Canadian Dental Association in Montreal in September 1902. Dr. Stevenson was elected CDA's first president on September 17, 1902.



The Dentistry Canada Museum is extremely grateful to Mrs. Joan Burbank of Victoria, B.C., for her generous donation of numerous dental artifacts. Mrs. Burbank's husband, Dr. Erwin C. Burbank, joined Dr. Stevenson's practice in 1927. ■

positive and negative impact of the cost recovery process.

The price of medical devices is expected to increase as a result of the new regulations. Hospitals and health professionals will most likely feel the impact of these changes, as they are the purchasers of most high-risk medical devices. TPP estimates that fee reduction provisions will help keep price increases below 5 per cent and that the fees should have no impact on the availability of necessary devices.

For more information on the new regulations and fees for medical devices, consult Health Canada's Web site at www.hc-sc.gc.ca/hpb. ■

March is Nutrition Month

Nutrition Month takes place throughout the month of March and is designed as an opportunity for Canadians to focus on nutrition. The 1999 campaign acknowledges changes in the health care system and recognizes that the onus is increasingly on the individual to care for his or her own health. Consequently, the campaign encourages Canadians to adopt healthy eating habits. The theme of this year's campaign is: *Eat Well, Live Well... for a Lifetime!* It also focuses on healthy aging to coincide with the Interna-

tional Year of Older Persons in 1999. The campaign stresses that aging is not just a concern of the elderly as it is a life-long process, and encourages Canadians of all ages to think of LIFE (Lifestyle, Independence, Food, Energy) when they think of healthy aging.

Throughout March, dietitians across Canada will show Canadians how to eat well through a series of nutrition-related initiatives. Information on community events can be obtained by contacting a local dietitian or by calling the Dietitians of Canada's main office at (416) 596-0857, ext. 318, or by visiting the organization's Web site at: www.dietitians.ca/eatwell. ■

1999 DIAC Survey

CDA will publish the Dental Industry Association of Canada's (DIAC) 1999 survey in the April issue of the *Journal*. It will question dentists on the types of materials, instruments and equipment they prefer. The editor encourages readers to complete the questionnaire and return it using the postage paid envelope.

The survey will appear in both the English- and French-language editions of the *Journal*. ■

The "Art" and Science of Dentistry

Since February 1998, the CDA *Journal* has been featuring the art, photography, and sculpture of Canadian dentists.

This initiative has given many dentists the opportunity to showcase their talents beyond the practice of dentistry. If you would like to submit your artwork for consideration, please contact *Journal* editor Dr. John O'Keefe by phone: (613) 523-1770 (Ottawa area) or 1-800-267-6354 (outside Ottawa area), fax: (613) 523-7736, or e-mail: jokeefe@cda-adc.ca. ■

APPOINTMENTS

New President at the RCDSO

Dr. Thomas McKean of WilLOWdale, Ont., was recently elected president of the Royal College of Dental Surgeons of Ontario (RCDSO) for the 1999-2000 term. He was first elected to the council of the RCDSO in 1996.



Dr. Thomas McKean

A graduate from the University of Toronto's faculty of dentistry, Dr. McKean is a general dentist who maintained a private practice in Petrolia, Ont., until 1970, when he moved his practice to Toronto. He served as chief of dentistry at the North York General Hospital from 1970 to 1984 where he currently remains on staff.

Dr. McKean was also a dental consultant to Ontario Blue Cross. He acted as the team dentist for Team Canada in 1974 and 1976, as

well as team dentist for the Toronto Maple Leafs from 1979 to 1982.

Dr. McKean is a member of CDA, the Ontario Dental Association, and the Canadian Academy of Restorative Dentistry and Prosthodontics. ■

Ontario Society of Endodontists Elects New President



Dr. Mitchell Levine

Dr. Mitchell Levine of Toronto, Ont., was recently elected president of the Ontario Society of Endodontists.

Dr. Levine is a graduate from Dalhousie University's faculty of dentistry. He received advanced endodontic training at the Harvard School of Dental Medicine in 1973.

An active member of the endodontic community in the

Toronto area, Dr. Levine was also an instructor at the University of Toronto's faculty of dentistry. ■

OBITUARIES

Bagnall, Dr. S.G.: A 1945 graduate from Dalhousie University's faculty of dentistry, Dr. Bagnall, of Halifax, N.S., died in September of 1998. He was a life member of CDA.

Schwartz, Dr. Louis: A 1934 graduate from the University of Montreal's faculty of dentistry, Dr. Schwartz, of Senneville, PQ, died in November of 1998. He was a life member of CDA.

Smillie, Dr. H.W.: A 1951 graduate from the University of Washington's faculty of dentistry, Dr. Smillie, of Richmond, B.C., died in December of 1998. He was a life member of CDA.

Smyth, Dr. B.R.: A 1943 graduate from the University of Toronto's faculty of dentistry, Dr. Smyth, of Peterborough, Ont., died in November of 1998. He was a life member of CDA.

Stephens, Dr. Russell G.: A 1950 graduate from the University of Toronto's faculty of dentistry, Dr. Stephens, of London, Ont., died in January of this year. Dr. Stephens was professor emeritus, division of oral medicine and radiology, at the University of Western Ontario's school of dentistry. ■

INFORMATION PACKAGE

March 1999

This month's Information Package is on **occupational exposure to infectious diseases**. It is available to CDA members for \$5.00 plus applicable tax.

A complete list of information packages is available upon request by calling 1-800-267-6354 or can be easily accessed on the CDA Web site at

www.cda-adc.ca

Once inside our site, please log into the "CDA Members" area and click on "Resource Centre" to view the list of packages.

New Acquisitions

Brånemark, Per-Ingvar and Tolman, Dan E. *Osseointegration in craniofacial reconstruction*. Quintessence, 1998.

Cawson, R.A. and Odell, E.W. *Essentials of oral pathology and medicine*. Churchill Livingstone, 1998.

Fonesca, Raymond J., Walker, Robert V., Betts, Norman J. et al. *Oral and maxillofacial trauma*. 2nd ed., vols. 1 & 2. Saunders, 1997.

Kay, E.J. and Nuttall, N.M. *Clinical decision making*. British Dental Association, 1997.

Lamey, Philip-John and Lewis, Michael A.O. *A clinical guide to oral medicine*. 2nd ed. British Dental Association, 1997.

Lynch, Samuel E., Genco, Robert J. and Marx, Robert E. *Tissue engineering: applications in maxillofacial surgery and periodontics*. Quintessence, 1999.

Palmer, Richard M. and Floyd, Peter D. *A clinical guide to periodontology*. British Dental Association, 1996.

Soames, J.V. and Southam, J.C. *Oral pathology*. 3rd ed. Oxford University Press, 1998.

Strassler, Howard E. and Serio, Francis, G., ed. *Tooth splinting and stabilization*. Dental Clinics of North America, Saunders, 1999.

GIVE SOMEONE A SECOND CHANCE.

March is Kidney Month.

When a Kidney Foundation volunteer
knocks on your door, please
give generously.



THE KIDNEY FOUNDATION
OF CANADA

Journal

March
1999
Vol. 65
No. 3

Dalacin® C

Prescribing Information - Dalacin® C capsules

Antibiotic

Action - Clindamycin exerts its antibacterial effect by causing cessation of protein synthesis and also causing a reduction in the rate of synthesis of nucleic acids.

INDICATIONS - Dalacin® C (clindamycin hydrochloride) is indicated in the treatment of serious infections due to sensitive anaerobic bacteria, such as bacteroides species, peptostreptococcus, anaerobic streptococci, clostridium species and microaerophilic streptococci.

Dalacin® C is also indicated in serious infections due to sensitive gram-positive organisms (staphylococci, including penicillinase-producing staphylococci, streptococci and pneumococci) when the patient is intolerant of, or the organism resistant to other appropriate antibiotics.

Dalacin® C is indicated for the treatment of the *Pneumocystis carinii* pneumonia in patients with AIDS. Clindamycin in combination with primaquine may be used in patients who are intolerant to, or fail to respond to conventional therapy.

Dalacin® C is indicated for prophylaxis against alpha-hemolytic (viridans group) Streptococci before dental, oral and upper respiratory tract surgery.

- a) The prophylaxis of bacterial endocarditis in patients allergic to penicillin with any of the following conditions: congenital cardiac malformations, rheumatic and other acquired valvular dysfunction, prosthetic heart valves, previous history of bacterial endocarditis, hypertrophic cardiomyopathy, surgically constructed systemic-pulmonary shunts, mitral valve prolapse with valvular regurgitation or mitral valve prolapse without regurgitation but associated with thickening and/or redundancy of the valve leaflets.
- b) Patients taking oral penicillin for prevention or recurrence of rheumatic fever should be given another agent such as clindamycin, for prevention of bacterial endocarditis.

CONTRAINDICATIONS - As with all drugs, the use of Dalacin® C (clindamycin hydrochloride) is contraindicated in patients previously found to be hypersensitive to this compound. Although cross-sensitization with Lincocin® (lincomycin hydrochloride) has not been demonstrated, it is recommended that Dalacin® C not be used in patients who have demonstrated lincomycin sensitivity.

Until further clinical experience is obtained Dalacin® C is not indicated in the newborn (infants below 30 days of age), or in pregnant women.

WARNINGS - Some cases of severe and persistent diarrhea have been reported during or after therapy with Dalacin® C (clindamycin hydrochloride). This diarrhea has been occasionally associated with blood and mucus in the stools and has at times resulted in acute colitis. When endoscopy has been performed, some of these cases have shown pseudomembrane formation.

If significant diarrhea occurs during therapy, this drug should be discontinued or, if necessary, continued only with close observation. Significant diarrhea occurring up to several weeks post-therapy should be managed as if antibiotic-associated.

If colitis is suspected, endoscopy is recommended. Mild cases showing minimal mucosal changes may respond to simple drug discontinuance. Moderate to severe cases, including those showing ulceration or pseudo membrane formation should be managed with fluid, electrolyte, and protein supplementation as indicated. Corticoid retention enemas and systemic corticoids may be of help in persistent cases, anticholinergic and antiperistaltic agents may worsen the condition. Other causes of colitis should be considered.

Studies indicate a toxin(s) produced by Clostridia (especially Clostridium difficile) may be a principal cause of clindamycin and other antibiotic-associated colitis. These studies also indicate that this toxigenic Clostridium is usually sensitive in vitro to vancomycin. When 125 mg to 500 mg of vancomycin were administered orally four times a day for 5 - 10 or more days, there was a rapid observed disappearance of the toxin from fecal samples and a coincidental recovery from the diarrhea.

It should be noted that serious relapses have occurred up to one month after apparently successful treatment. A relatively prolonged period of continuing observation is therefore recommended.

In patients with G-6-PD deficiency, the combination of clindamycin with primaquine may cause hemolytic reactions; reference should also be made to the primaquine product monograph for other possible risk groups for other hematologic reactions.

PRECAUTIONS - Dalacin® C (clindamycin hydrochloride) like any drug, should be prescribed with caution in atopic individuals.

The use of antibiotics occasionally results in overgrowth of non-susceptible organisms particularly yeasts. Should super-infections occur, appropriate measures should be taken as dictated by the clinical situation.

As with all antibiotics, perform culture and sensitivity studies in conjunction with drug therapy.

Since abnormalities of liver function tests have been noted occasionally in animals and man, periodic liver function tests should be performed during prolonged therapy. Blood counts should also be monitored during extended therapy.

Routine blood examinations should be done during therapy with primaquine to monitor potential hematologic toxicities.

Dalacin® C may be used in anorectic patients. Since the serum half-life of clindamycin in patients with impaired hepatic function is greater than that found in normal patients, the dose of Dalacin® C should be appropriately decreased. Hemodialysis and peritoneal dialysis are not effective means of removing the compound from the blood. Periodic serum levels should be determined in patients with severe hepatic and renal insufficiency.

ADVERSE REACTIONS - Only 65 of the 851 patients treated for infections developed side effects representing 7.6% of the total study group or 8.0% of the 813 patients with follow-up. Only 22 of these patients' symptoms were considered due to Dalacin® C (clindamycin hydrochloride) for an incidence of 2.7% among the 813 cases with follow-up.

Gastrointestinal - Abdominal pain occurred in 12 patients for an overall incidence of 1.4% in 851 patients and was considered drug related in 7 (0.8%).

Diarrhea occurred in 22 cases for an overall incidence of 2.6% and was drug related in 13 (1.5%). Vomiting occurred in 14 cases with an overall incidence of 1.6%. Seven patients (0.8%) had nausea which was drug related in 2 cases (0.2%). Side effects were severe in 10 instances. (See also under "WARNINGS"). Esophagitis, at times severe, has been reported.

Hemopoietic - Transient neutropenia (leukopenia) has been reported. Its relationship to therapy is unknown. No irreversible hematologic toxicity has been reported. However, in clindamycin/primaquine combination studies, serious hematologic toxicities (grade III, grade IV neutropenia or anemia, platelet counts < 50 X 10⁹/L, or methemoglobin levels of 15% or greater) have been observed.

Skin and Mucous Membranes - Skin rashes have been reported in 6 patients (0.7%), none of which could be determined as drug related. One case of urticaria was reported but its relationship to drug therapy could not be determined.

Liver - Although no direct relationship of Dalacin® C to liver dysfunction has been noted, transient abnormalities in liver function tests (elevations of alkaline phosphatase and serum transaminase) have been observed in a few instances.

SYMPTOMS AND TREATMENT OF OVERDOSAGE - No cases of overdosage have been reported. It would be expected however, that should overdosage occur, gastrointestinal side effects including abdominal pain, nausea, vomiting and diarrhea might be seen. During clinical trials one 3-year old child was given 100 mg/kg of Dalacin® C (clindamycin hydrochloride) for five days and showed mild abdominal pain and diarrhea. One 13-year old patient was given 75 mg/kg for five days with no side effects. In both cases laboratory values remained normal.

Overdosage should be treated with simple gastric lavage. No specific antidote is known.

DOSAGE AND ADMINISTRATION

Adults:	150 mg every 6 hours.
Moderately severe infections:	300 mg every 6 hours.
Severe infections:	450 mg every 6 hours.

Children (over one month of age):

One of the following two dosage ranges should be selected depending on the severity of the infection:

1. 8-16 mg/kg/day (4-8 mg /lb/day) divided into 3 or 4 equal doses.
2. 16-20 mg/kg/day (8-10 mg/lb/day) divided into 3 or 4 equal doses.

Pneumocystis carinii pneumonia in patients with AIDS:

Dalacin C (clindamycin hydrochloride) 300-450 mg may be given orally every 6 hours in combination with 15-30 mg of primaquine for 21 days. Alternatively, DALACIN C PHOSPHATE (clindamycin phosphate) 600-900 mg (IV) may be given every 6 hours or 900 mg (IV) every 8 hours in combination with oral daily dose of 15-30 mg of primaquine. If patients should develop serious hematologic adverse effects, reducing the dosage regimen of primaquine and/or DALACIN C capsule should be considered.

Absorption of Dalacin® C (clindamycin hydrochloride) is not appreciably modified by ingestion of food and may be taken with meals.

To avoid the possibility of esophageal irritation, Dalacin® C capsules should be taken with a full glass of water.

For prevention of endocarditis: Adults: 300 mg orally 1 hour before procedure; then 150 mg 6 hours after initial dose. Children: 10 mg/kg (not to exceed adult dose) orally 1 hour before procedure; then 5 mg/kg 6 hours after initial dose.

Note: With α -hemolytic streptococcal infections, treatment should continue for at least 10 days to diminish the likelihood of subsequent rheumatic fever or glomerulonephritis.

AVAILABILITY OF DOSAGE FORMS

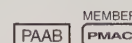
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The Future Looks Bright for CDAnet

James Gagnon

In 1998, CDAnet had its best year ever. More than 8,400 dentists now belong to the network, with over 1,900 new members joining in 1998. There are over 4,500 dental offices offering the efficiency of electronic processing to their patients and helping to control administrative costs for the various plans. And some 7 million claims were processed in 1998, up more than 33% since 1997. You are to be congratulated on the accomplishment these statistics represent. CDAnet is the world's most extensive and advanced data transmission network for dental insurance. Canadian dentists can be proud of their success in spearheading the use of this leading-edge technology.

This year, we expect new insurance carriers to join CDAnet, as well as the very first provincial government plan. Talks with representatives of other government plans are under way and may lead to new participation agreements in various regions of the country.

The private networks already working in partnership with the CDA will be offering their services to the Quebec Dental Surgeons Association when Réseau ACDQ/

CDAnet is launched. They say they will likely be handling transactions using Version 4.0 within a few months; this means that many of you may ask your vendors to upgrade your CDAnet software. We will soon be asking the vendors to certify that their software is compatible with Version 4.0. They have been very patient up to now, and I would like to thank them. We will keep you informed of all progress through our Web site, as well as various CDA and provincial association publications.

As you can see, the CDAnet team is not resting on its laurels. Rather, we are continuing our efforts to make the most of your investment in new technologies.

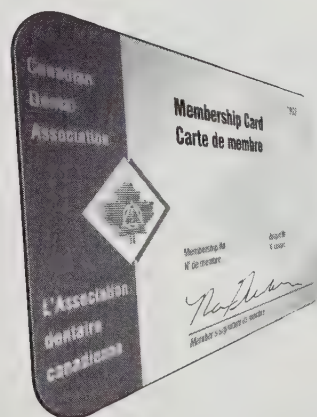
Finally, we are going to ensure that all our partners' software is Y2K compliant — all versions of CDAnet are already. **We encourage you to do the same as soon as possible so that the Year 2000 bug does not interfere with your services.**

Despite the challenges we face in this final year of the second millennium, our combined efforts over the coming months and years are sure to bring impressive increases in membership and in

the number of transactions processed by CDAnet and Quebec's Réseau ACDQ/CDAnet. ■

Mr. James Gagnon is CDA's director of practice management support services.

CDA Membership



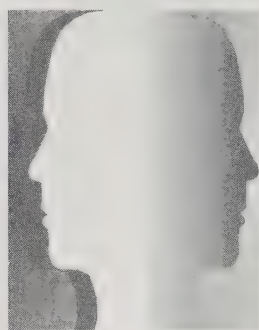
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DEBATE



Practice Management in Dental Schools — Is There Such a Thing?

Andrew Kay
Deborah Saunders

© J Can Dent Assoc 1999; 65:142, 179

For a number of years, dental students have expressed to various dental associations and organizations the need to increase the time allocated to practice management in dental school. As students, we are constantly reminded of the fact that our profession is part "technical" dentistry and part entrepreneurship. It seems that business skills are as important — if not more so — than clinical skills, since owning a dental practice is really equivalent to running a small to medium-sized business. By any yardstick, we receive very little education in the latter field.

Today, dentists are faced with increased competition in the marketplace for a number of reasons. There are more dental professionals on the market and many of these professionals are retiring later in life than hitherto. As the incidence of dental disease decreases, the demand for dental services goes down, in turn creating more competition.

What does all this mean to graduating students and new dentists? First, they must get to know their patients. After all, knowing

your clientele helps you make better business decisions. This entails learning to gauge patients' psychological state, their financial status and the dental benefits coverage they receive, if any. They must also be sensitive to their patients' cultural background.

Most importantly, though, students and new dentists must be taught about the expectations of their patients with respect to their treatment. For example, patients are increasingly becoming familiar with such terms as "laser dentistry," "intraoral cameras," "pain-free needles," etc. Through television and print reporting and advertising, patients are learning about the latest developments in medicine and dentistry. Their knowledge of these advances may be superficial, but they are nevertheless familiar with the popular "catchwords," if you will. With this familiarity comes expectations — the belief, for example, that every dentist is not only knowledgeable about the new techniques but possesses all the appropriate equipment as well. These expectations will be a contributing factor in our patients' sat-

isfaction — or dissatisfaction — with the treatment they receive.

So if I, as a young dentist, want to ensure the satisfaction of my patients, I may want to have all this "state-of-the-art" equipment. In my inexperience, I have to pose a number of questions related to this desire. Do I know what the price of a particular piece of equipment should be? Do I know if there are tax benefits to renting versus purchasing such equipment? Can I even rent this equipment?

Then I ask myself, Do I show my staff how to use this equipment? What if a staff member breaks my equipment? Is that person responsible for the equipment if he or she should happen to break it? Can I fire staff for breaking my equipment? Do I dock their pay? I might sound pretty harsh by asking these questions, but the fact is that I have never had to deal with staff who work under me and I have never owned equipment worth thousands of dollars before.

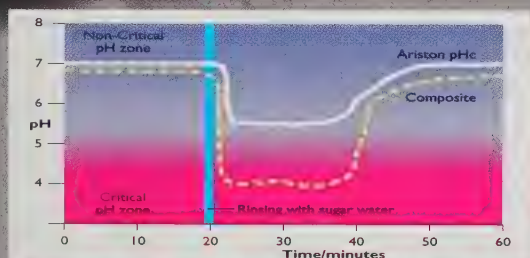
These questions lead to others. What do I know about human

Continued on page 179

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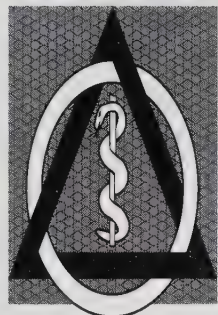
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PROFESSIONAL ISSUES



The Changing Face of Dentistry

Don A. Friedlander, B.Sc., DDS

J Can Dent Assoc 1999; 65:144-5

Introduction

I believe that the biggest issue facing our profession is change. I also believe that one of the future's most prized skills will be the ability to adapt to and manage change. My objective here is to examine where and how this change is occurring and to understand its implications for dentistry. And second, to consider the skills needed to manage change.

Clinical Practice

Over the next few years, I predict the introduction of a caries vaccine, hard tissue laser applications, anti-plaque agents, bonding agents and bonded materials as permanent as the tooth itself, and improved electronic anesthesia. Online databases containing treatment outcomes and guidelines of care will be utilized to enhance clinical decision making.

From the patient's perspective, this technology will alter how we select health providers, what we expect when we visit a dentist's office, and our attitudes about health care and health professions. Technology will change our lives.

What skills are required to deal with these changes? Oral health care, like all industries, must monitor and respond to rapidly emerging technologies and consider their wide-ranging impact on clinical dental care as well as on the

financial, behavioural and social aspects of care delivery. Not only will dentists need to understand the basic biology underlying these technologies, but they will have to understand how to use them and assess their effectiveness. In addition, they'll have to keep up with new knowledge generated by rapidly advancing research.

These current and emerging trends offer tremendous challenge and opportunity for dentistry and clearly indicate the need for the profession to become engaged in shaping the future. Dentists must recognize the need to be well-trained, skilled clinicians; to become smart business people; to monitor advances beyond dentistry and acquire new knowledge and skills; and to integrate new knowledges into their practices and businesses. Like the rest of our society, dentists must be prepared to be perpetual learners. To be teachable, trainable, malleable, and responsive to a changing world.

Evidence-based Dentistry

Far too few decisions in health services are made as a result of good evidence. Why? There are problems with the amount of evidence available (or lack thereof), problems with its quality, or our ability to access it, and for some issues, problems with overcoming a culture of practice based on author-

ity rather than evidence. Yet evidence-based dentistry improves the effective use of research evidence in clinical practice. It uses resources more effectively. It relies on scientific evidence rather than authority for clinical decision making. And it enables practitioners to monitor and develop clinical performance.

What are the skills required to meet these challenges? We need to develop new skills for identifying clinical problems, for searching the literature, and for critical appraisal of information, techniques, materials and outcomes.

Demography

Present projections indicate our population will increase by 60 per cent by the year 2050. Moreover, the growth will be concentrated at the two ends of the age spectrum. The birthrate is expected to increase dramatically in the new century, and Canada will receive many young immigrants. By the year 2011, the early members of the baby boom will reach 65, and by 2050, the number of citizens 65 years and older will have doubled. Concurrently, our population will become far more diverse, and the term "minority" will need to be redefined.

As we grow older, our needs and attitudes change. There are also shifts in the distribution of wealth, in service needs and

opportunities, and in the organization of our society. We are now experiencing the largest generational transfer of wealth and power in our history as the World War II generation passes the baton to the baby boomers. We are repeatedly reminded that the generation capitalizing on this flow of funds will be an important player in the financial structure of the early 21st century. By 2010, the boomers will be on the brink of their senior years and the numbers of people over the age of 65 will reach new heights.

What are the implications for dentistry? The aging population will have fewer new caries and more root caries. More teeth will be retained, and more people will be even more disposed to keep their teeth. There will be more chronic illness and multiple disease problems, and the risk for oral disease will be elevated by these medical conditions and the associated medications. The baby boomers and their children will be better educated and will have access to a wider range of information. They'll have greater financial resources. They'll be demanding and questioning, wanting information and seeking second opinions. They'll shop around. They'll expect to be part of treatment planning and clinical decision making, and they'll expect value and service. Their decisions will be made on self-image and comfort, and on insurance coverage.

Regarding the increasing diversity of the population, there will be increasingly diverse attitudes toward health, health care, and health team members. There will be variation in priorities for using financial resources. Many racial, ethnic, cultural and gender groups will seek dentists from similar backgrounds. There will be language and communications issues. And there will be wider variations in health and disease patterns.

What skills will be required? We'll have to have a service orientation, and a better understanding of consumers' values. We'll have to increase our cultural awareness and sensitivity. We'll need to be information savvy and know what information resources are avail-

able to consumers. We'll need to embrace continued learning.

Economics

Finances will be a driving force in society, health care and dentistry. The need to understand financial and economic forces and their impact will be vital for the dental industry in the coming decades. One such force that has many concerned is managed care. Managed care programs are likely to continue into the future, although their label and their approach may change slightly.

Dentistry, however, can become even more effective in informing consumers and health plan purchasers of the unique aspects of oral health care services and the ultimate benefits of appropriate care. Similarly, the profession must be able to appropriately explain the cost elements within its fee structures and the implications of typical managed care coverage approaches. Ultimately it's important to take an open view of the trends and potential impact of a market-driven health care system and to address issues that have been controversial, or have been put aside in the past.

Human Resources

What about change in the area of human resources? We can identify the following trends. There are reports of inadequate access to care by the uninsured and by individuals with limited financial resources in some communities. There's a potential increased need for oral health care due to an aging population, individuals with limited childhood preventive care, and medically complex and compromised patients. There's a declining number of dental school graduates and an increasing number of dentists reaching retirement age. There is an increasing number of females entering the profession, many of whom may choose to practice part-time during child-bearing years.

The skills required? This one's the easiest, yet also the hardest. To manage this change effectively, you need a dental degree, and a commitment to being the best you can be.

Ethics

As dentists, we must ensure that each one of our patients is

treated with utmost professionalism and care. We must ensure that any changes incorporated into our practices are directed toward better quality oral health care for those we serve. We must resolve any potential conflict between the benefits we enjoy and the responsibilities we assume.

Let me use composites as a quick and simple illustration. New composites come onto the market monthly, perhaps even weekly. All are accompanied by the highest acclaim of the manufacturers. Most are accompanied by sincere-sounding recommendations of educators in dental schools and on the circuit. And many are incorporated into our practices without thorough product testing, and without objective research through clinical trials. With little evidential support for their use, is the best interest of our patients truly being served?

Conclusions

The changing face of dentistry of the last 20 to 30 years is responsible for much of the anxiety we feel about the future. The scope and speed of change during this time are greater than in any other period of recorded history. It's not surprising that we are, at times, overwhelmed. The future does pose significant challenges. But it also offers opportunities that will encourage us to use our knowledge and skills and will feed our curiosity. Future success will depend on a willingness to learn about what is happening around us, a willingness to critically evaluate new information and knowledge, and a desire to grow and adapt. ■

Dr. Friedlander is in private practice in Ottawa, Ont.

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Adapted from a presentation at the CDADCF Canadian Dental Students Conference, June 1998.

The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

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manner, without having to submit to a more official legal process. It also helps minimize the effect on the dentist's professional liability program with respect to increasing deductibles and perhaps additional legal expenses.

As a result of the mediation committee's work, we have been able to raise our members' awareness regarding the dispute resolution process and related issues.

First, when dentists receive our letter informing them of a complaint, they are asked to submit the appropriate information by a certain date. Generally, the dentist directly involved in the dispute is very compliant. Often though, the dentist currently providing the patient's treatment will fail to respond to the letter. We therefore try to encourage all our members to consider that, if some day the shoe were on the other foot, they would appreciate their colleagues' support and prompt response in such situations.

Secondly, the committee has seen several instances when, upon receiving a letter, the dentist involved in the dispute has contacted the patient personally to seek an explanation for the complaint, or attempted to resolve the

issue without our committee's involvement. We are always willing to withdraw our services if a dentist would like to try to negotiate a settlement personally. However, once the letter of dispute is in the hands of the dentist, we ask that he or she not contact the patient directly without first talking to the mediator. If the dentist insists on attempting to reach a private settlement, then the mediator will contact the patient to see if that is acceptable. If the patient refuses, we will then relay the message to the dentist and encourage him or her once again to consider our services. Direct contact between the dentist and the patient can often make things worse. It has been our experience that it only serves to harden the patient's stance with respect to the dentist's treatment.

Lastly, our committee believes that retreatment by the dentist involved in the complaint is not a wise option. In most cases, the patient is not interested in going back to the dentist. We therefore ask the dentist to realize that any care provided after the resolution would be more closely scrutinized since the patient already harbours feelings of mistrust.

Dentists who are named in a patient complaint should consider the possibility of dealing with the dispute through a mediation committee. If no such committee exists, it is possible to develop a dispute resolution process locally. I encourage dental societies throughout the country to organize similar committees if they have not already done so. Our experience at the ODS has proven that it is a worthwhile endeavour for everyone involved and a service that our members have come to appreciate. ■

Dr. Cousens is co-chair of the Ottawa Dental Society mediation and ethics committee. He is in private practice in oral and maxillofacial surgery in Ottawa.

Adapted from a presentation at the CDA/DCF Canadian Dental Students Conference, June 1998.

Reprint requests to: Dr. Cousens, 239 Argyle Ave., Ottawa, ON K2P 1B8

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A man in a white martial arts gi is smiling and holding a large, round target. The target has a black outer ring and a red center with a white starburst pattern. Another person, also in a white gi, is kicking the target. The background is a plain, light-colored wall.

He's also a dentist.

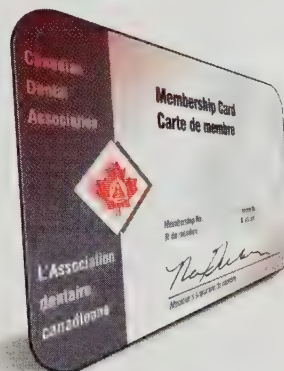
John Fitzgerald, Dentist, CDA member and devoted dad.



John Fitzgerald loves practising Taekwon-Do with his son, Jacob. It gives them a chance to spend some quality time together, while learning about self-defense, confidence, and integrity. They get a big kick out of it, and practise as often as three times a week. That's a lot considering John's a successful dentist. But, because he's a CDA member, John can enjoy Taekwon-Do as much as his career.

CDA delivers services that support dentists in the daily operation of their practices. CDA's electronic claims management system, CDAnet, links the dental office to the insurance company – thereby speeding up the insurance claim process. CDA's practice management publications provide a reference for dentists facing financial, human resources, or office administration decisions. Through public education programs, which include advertisements and information hand-outs, CDA helps inform patients on the importance of proper oral health and maintenance. In short, CDA is your best resource for practice management information.

John's glad he's a CDA member. It allows him to focus on the important things in his life other than his career; like blocking Jacob's well-aimed kick to the midsection.



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PROFESSIONAL ISSUES



Dental Benefits Issues and New Dentists

Burton Conrod, DDS

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New graduates about to enter dental practice in Canada should be aware of the three factors largely responsible for improving the oral health of Canadians over the last 25 years, namely the use of systemic and topical fluoride, access to preventive dental care and the existence of dental benefit plans.

Dentists learn about fluoride and preventive dental care in dental school. What they learn about dental benefit plans, however, they learn over time, through practice experience. The way in which a dentist deals with dental benefits issues can affect patient care, patients' perception of treatment and treatment planning, and, by extension, their impression of the entire profession. CDA has provided Canadian dentists with the tools to deal with dental benefits plans. The standard dental claim form, the Universal System of Codes and List of Services (USC&LS), and CDAnet, the electronic claims processing system, ensure that most third-party transactions are uniform and follow protocols designed by the profession. It is important for new dentists to seek all the information available on dental benefit plans from CDA and their provincial dental association

in order to be well informed when they begin practicing.

Dental benefit plans started in the '60s and grew in the '70s, when wage and price controls dictated the use of tax-free benefits instead of salary increases as a means of motivating and compensating employees. Dental benefits coverage was expanded recently when the federal government decided to allow unincorporated small businesses to provide tax-exempt dental benefits to their employees. Over the years, dental benefit plans have evolved into a partnership between government, business, employees, the benefits industry and dentistry, resulting in a very effective, privately funded oral health care system.

Dental benefit plans have many positive effects. Recent statistics show that people with benefit coverage are more likely to visit the dentist. In fact, 83% of those with dental plans see their dentist at least once a year, compared to only 60% of those without coverage. Dental benefit plans promote access to regular preventive care. Over 50% of people with plans have all their natural teeth, compared to only 40% of those without coverage. Increased benefits coverage has resulted in a dramatic decline in dental dis-

ease. Preventive services are now more common than restorative services. For employers, this means that employees are in better health. Work time lost for dental emergencies is significant, and a great deal of dental disease can be prevented by regular preventive care. For the government, it means that Medicare costs for dental emergency services should decrease as dental coverage expands. As for dentistry, it means a steady increase in the demand for dental services.

It is very important that everyone involved have reasonable expectations of benefit plans. Dentists and patients alike should be clear on one point — *dental plans exist solely to help patients pay for the cost of dental care and to maintain their oral health through regular preventive care.*

Dental Benefit Plan Design

CDA has developed a document entitled *Ten Guiding Principles Every Dentist Should Know Before Talking to Patients About Managed Dental Care* that explains how dentists should deal with dental benefit plans. One of the most important principles for new dentists to understand is the right of patients to choose their dentist. Plans that restrict the patient to

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receiving care from a list of dentists violate this principle. The result is often incompatibility between the patient and the plan dentist, and the creation of an environment where the patient is uncomfortable and therefore less likely to access needed care. We know that a significant element of trust is required to achieve a proper dentist-patient relationship where the patient is an active participant in treatment planning — and thus more likely to follow treatment and home care recommendations.

Another important principle states that treatment plans must be based on patients' oral health needs and not on their level of benefit coverage. Plans cannot be expected to cover every dental service required; patients should be responsible for some of the cost. Dentists must also take steps to maintain the public perception of their primacy in the planning and delivery of oral health care. Treatment plans are developed following diagnosis of the patient's oral health and in consultation with the patient, not the plan administrator. Only a dentist has the training, skill and expertise to provide a comprehensive diagnosis of oral health and to advise on appropriate treatment and care.

CDA's guiding principles define managed care as a system of third-party dental plans where at least one of two unacceptable conditions exist. The first is when plans remove patients' freedom to choose their dentist; capitation schemes, preferred provider organization (PPO) plans and dental health maintenance organization (DHMO) plans fall in this category. The second unacceptable plan structure crosses the line from cost control into treatment control and interferes with the dentist-patient relationship. Cost control becomes treatment control when, for example, you are encouraged to administer topical antibiotics to all your patients or to place a removable prosthesis where a fixed one is clearly indicated.

The good news is that in order to be successful, managed care plans must sign up dentists, and so far, Canadian dentists have not

been very keen to participate. Before signing any third-party agreement, read all the information available from the plan and consult CDA's Practice Management Support Services department, your lawyer and your accountant. Every time a dentist agrees to participate in a dental plan that removes patients' right to choose their dentist, or the dentist's right to diagnose and recommend a treatment plan, the future of the profession is at stake. Your own professional future is also at stake if you agree to terms that cause you to treat patients in an unethical manner, perhaps by forcing them to seek care only at your office, recommending less than comprehensive care or giving a discriminatory discount. Your financial security is at risk in any discount scheme. If, for example, your office has a 60% overhead, discounting your fees by 15% will decrease your net income by about 37%! Capitation plans fail because it is impossible to estimate the cost of quality care for a population, build in a profit margin for the plan administrator, guarantee discount rates and not have the dentist or patient short-changed.

Although fees for preventive dental services have increased at less than the cost of inflation over the last ten years, dental plan costs have increased more rapidly because more people are accessing regular preventive dental care more often. Acceptable cost control measures are dentistry's answer to employers' problem of increasing costs, and include promoting prevention, patient co-payments, annual maximums and non-assignment, as well as claim audits and monitoring of questionable treatment practices. Encouraging patients to access preventive care and to take an active role in their treatment plan, and limiting overall cost rather than the frequency of individual services seems to be the answer. Effective cost control also requires a partnership between the plan administrators and the dental regulatory authorities who must be consulted and presented with the evidence when treatment or treatment planning appears questionable.

Operation of Dental Benefit Plans

You should set your fees by consulting provincial fee guides or surveys and making adjustments to reflect your office overhead and your need for a reasonable income. Plan administrators develop benefit schedules indicating what amounts they will contribute toward the cost of dental care; they do not determine dentists' fees or develop fee guides. Most plans base their benefit schedules on provincial fee guides. Patients should be charged the same fee for the same service performed under the same circumstances, regardless of whether they receive benefit coverage or not. If you offer discounts to subscribers of a certain plan, you should extend the same discount to other patients.

Co-payments are included in plan design to make patients take responsibility for their own health and to control costs by requiring the plan to cover only a percentage of your fee. It is unethical to forgive a co-payment. The dental claim form you sign indicates your total fee for the service. The plan requires the patient to pay part of that fee, even if you discount it. For example, if your usual fee for a procedure is \$100 and there is a 20% co-payment required, the patient pays you \$100 and the plan reimburses the patient \$80. If you wish to discount your fee by 20%, the claim form should indicate a fee of \$80; the plan will then reimburse the patient 80% of \$80, or \$64.

Accepting assignment of dental benefits from your patients may look like an attractive alternative when starting a practice, but it can interfere with the dentist-patient relationship and promote an entitlement or insurance mentality towards dental care. The dangers of assignment are that patients:

1. are not aware of the cost and value of dentistry;
2. feel the dentist is responsible to the insurer;
3. are not motivated to follow home care instructions since care is "free"; and

4. become unwilling to accept treatment not covered.

Assignment also leads to control by a third party of fees and treatment frequency, and results in having to deal with the problem of high accounts receivable with many small nuisance accounts to collect.

Patients who insist that you accept assignment usually mean that they will come to your office if treatment is at no cost to them and if you accept the financial risk of any uncovered treatment. Patients who pay the dentist directly are more apt to understand their treatment plan and to become a partner in their oral health. Alternatives to assignment include accepting post-dated cheques and payment by credit card. Plans pay patients much faster than dentists. By filing your claims on CDAnet, for example, patients are paid in as little as three to five days. CDAnet is a convenient way to file claims electronically, streamlining administrative procedures for the dentist, the patient and the plan administrator as well as facilitating faster payment of the benefit. New dentists should realize that this is a good way to promote non-assignment in their practices.

For patients to perform proper home care procedures and seek

regular preventive care, they must understand the necessity of any proposed treatment. Making sure that patients are aware of their financial obligation ensures that they will ask the right questions regarding treatment recommendations. Helping patients to submit a predetermination form for benefits encourages dialogue. Predeterminations are not used to "shop the plan" to determine what treatment is covered. CDA's standard treatment plan form is used to establish the patient's eligibility for coverage, not to let the third party make clinical judgments.

Many plans contain an alternate benefits clause. This is a provision that allows a third party to base the benefit paid on the fee for an alternate procedure which is less expensive than the one recommended by the dentist. Let's say, for example, that a plan lists fixed partial dentures as a benefit, but contains an alternate benefits clause. The dental consultant for the plan administrator may decide that a removable partial denture is professionally acceptable, in which case the plan will pay only the cost of the removable prosthesis toward the cost of the fixed restoration. This is usually a very subjective matter, and may leave

the patient feeling that the dentist was recommending unneeded treatment. It would be better if the plan covered fixed bridges at a higher patient co-payment level, and left the choice of treatment to the patient and dentist.

Types of Dental Plans

There are four basic types of dental plans that may be offered to subscribers either on a voluntary or mandatory basis, or as flex benefits. **Table I** illustrates some of the advantages and disadvantages of the various types of plans. Indemnity dental plans are insured plans where a third party underwrites the cost of dental care in exchange for an insurance premium. There are very few of these "old style" plans in existence because of the cost of having the insurer take all the risk. Administrative services only (ASO) or cost plus plans are funded directly by the employer who pays for the dental treatment and usually has the claims administered by a third party. Some of these plans operate like a dental spending account; they have very few treatment restrictions and low administrative costs. Direct reimbursement plans are also employer-funded and are particularly suited to small businesses because administration is

Table I

Advantages and disadvantages of the various types of dental benefit plans.

Plan Feature	Indemnity Plans	ASO/Cost Plus Plans	Direct Reimbursement Plans	Managed Care Plans
Allows freedom of choice	+	+	+	
Removes freedom of choice				-
Percentage of premiums spent on dental care	75-	95+	97+	65-
Employer assumes all the risk		-		
Carrier assumes all the risk	+			
Encourages assignment of benefits				-
Allows non-assignment of benefits	+	+		
Encourages non-assignment of benefits			+	
Employer premiums lower in short term				+
Premiums higher than other plans	-			
Acceptable cost-containment measures	+	+	+	
No system to track utilization			-	
Employer must train staff to administer			-	
Frequency and treatment limitations	-			-
May require risk assessment for eligibility				-

easily handled in-house. Patients pay for dental care and present a receipt to their employer for reimbursement. Managed care plans may cover fewer preventive services than other plans, and usually require the patient to select a dentist from a list of preferred providers. The dentist's fees are generally discounted and assignment is encouraged or required. Treatment limitations may require that only the least expensive alternative be recommended.

Flex benefits allow an employee to choose different benefits from a menu using a point system. Each employee has a certain amount of points to spend on life insurance, health benefits or disability coverage. Flex dental plans usually allow the employee to select their dentist, allow non-assignment, and incorporate acceptable cost-containment measures. The problem with these benefits is that employees must decide to choose dental coverage by predicting their future needs. As well, people who are not motivated to maintain their oral health

will not choose dental plans. Consequently, when a new menu of benefits is presented every few years, there will always be a group of employees who will cause plan costs to increase when they join because they have had no dental coverage and little dental treatment for several years. Core-plus plans offer employees a core package of benefits that they can add to by choosing from a menu. Core-plus plans should always include basic dental coverage to ensure everyone enjoys the benefits of regular preventive dental care.

Dealing with Dental Benefits Issues

Dentists have a duty to help patients receive whatever benefits they are eligible for by fully explaining all treatment recommendations and costs, filling out standard dental treatment plan forms and standard dental claim forms. It is not accomplished by organizing recall schedules to suit the frequency limitations of various plans or by recommending diagnostic procedures based on

patients' coverage. Dentists must not allow dental benefit plans to interfere with the dentist-patient relationship or with treatment recommendations. The best way to stay on top of the issues is to stay involved in organized dentistry. CDA and provincial dental associations have a wide array of printed material available about dental benefits, and their experienced staff and committee members can answer your benefits questions. It is important to support provincial associations and CDA to make sure that *dentistry* continues to decide what is best for our patients and our profession. ■

Dr. Conrod is CDA's vice president and past chairman of the Committee on Dental Benefits Issues.

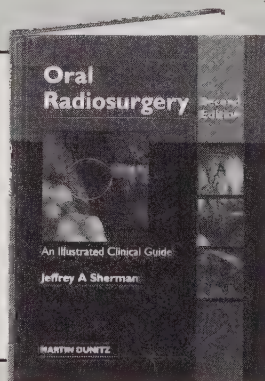
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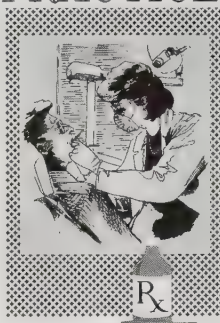


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CLINICAL PRACTICE



Design of a Cast Bar Reinforced Provisional Restoration for the Management of the Interim Phase in Implant Dentistry

Sebastian Saba, DDS, Cert. Prosth.

ABSTRACT

Implant therapy is becoming the treatment of choice for the replacement of teeth in partially edentulous arches. The interim phase of implant treatment often presents particular problems because of the position of the remaining teeth, their periodontal status, and the loss of vertical dimension of occlusion. This case report will discuss the design and fabrication of a cast bar reinforced long-span provisional restoration based on a diagnostic wax-up to simplify the management of the interim phase.

MeSH Key Words: dental implants; dental prosthesis design; dental restoration, temporary/methods.

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The management of the interim phase in dental implant therapy is usually the most difficult phase for both the patient and the clinician.¹ Certain clinical conditions, such as long-span edentulous regions, loss of interocclusal space, and lack of posterior support, present problems for conventional fixed provisional restorations. The long-span and traumatic occlusions allow flexure in the provisional bridge, which results in fractures and washout of the cementing medium and associated complications to the natural abutments and implant recipient sites.

Provisional restorations may be reinforced with a variety of materials to avoid fracture. Youdelis and Faucher² report a technique that uses stainless steel wire to reinforce an autopolymerizing acrylic resin provisional restoration. Binkley and Irvin³ describe heat-processed provisional restorations reinforced with a 16- or 18-gauge cast metal framework.

In order to establish the proper vertical dimension of occlusion and protect the surgical site of the implant during the regenerative and osseointegration phases, a cast metal bar reinforced provisional restoration may be fabricated. The cast bar provides enough rigidity to prevent flexure in the bridge, thus avoiding fractures and cement washout. The added rigidity of a thick cast bar over the implant surgical site allows the pontic region of the provisional restoration to be relieved for post-surgical healing without compromising the patient. The provisional restorations allow for an assessment of the vertical dimension of occlusion and the protection of the surgical site, permitting an uncomplicated interim phase of treatment.⁴

Diagnostic Phase

A 60-year-old woman presented with failing prosthetic appliances (Figs. 1 and 2). Implant therapy was planned to replace the failing

bridge in the upper-right quadrant. The interocclusal space had been compromised and needed to be corrected. Initially, a cross arch fixed acrylic provisional restoration was placed, but the long-span edentulous area, premature washout and multiple fractures created the need for a reinforced fixed provisional restoration.

Study models were mounted and a diagnostic wax-up generated to help identify the occlusal pathology and diagnose the interocclusal violation and esthetic limitations. These limitations can be corrected in the design of the provisional restoration. The wax-up also simplifies communication of treatment plan options to the patient and helps him or her make a better informed decision. (Figs. 3, 4, and 5).

Laboratory Phase

A master cast was generated with an impression of the remaining prepared abutments, and a wax-bar pattern, adapted to cover



Fig. 1: Intraoral view of pre-operative condition.



Fig. 2: Intraoral view of pre-operative condition.

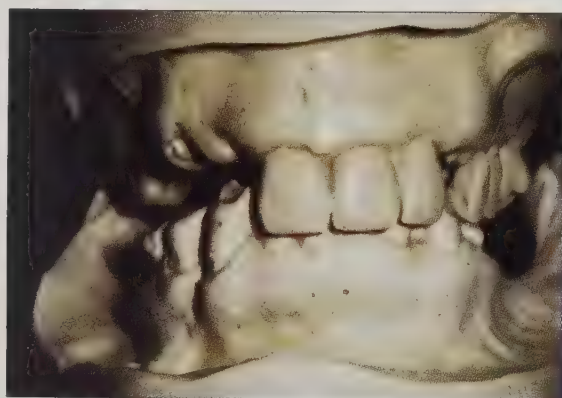


Fig. 3: Mounted study models.

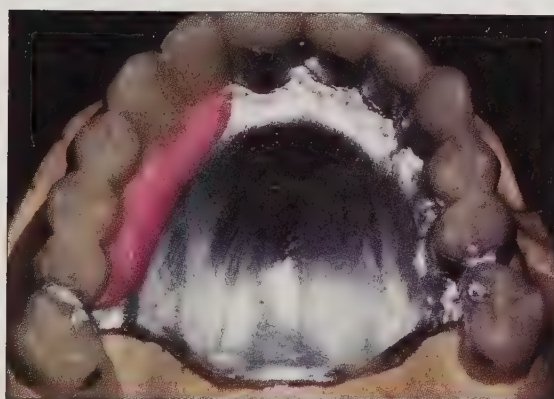


Fig. 4: Diagnostic wax-up.

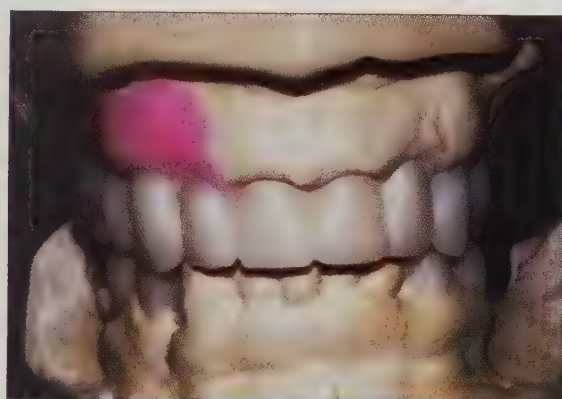


Fig. 5: Diagnostic wax-up.

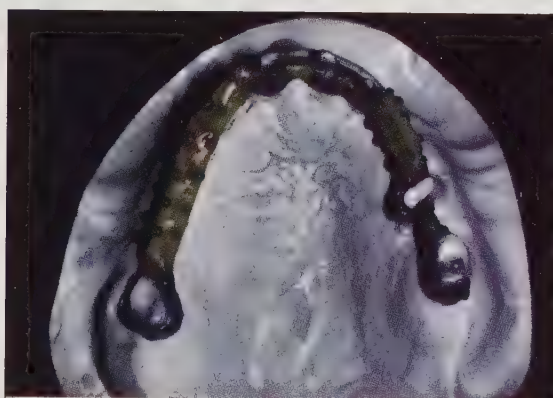


Fig. 6: Wax bar pattern on abutment master cast.

the lingual and proximal surfaces of each abutment (**Fig. 6**), was sprued, invested and cast in the alloy of choice (**Fig. 7**). A transparent index of the original provisional restoration allowed us to duplicate its contours, facilitating patient acceptance (**Fig. 8**). The cast bar was adapted to the master cast and liquid acrylic opaque was applied (**Fig. 9**). The final wax-up was completed (**Figs. 10 and 11**) and heat processed with tooth-coloured acrylic (**Fig. 12**). The cast metal bar reinforced provisional restoration was then ready for insertion (**Fig. 13**).

Conclusion

This long-span, long-term provisional restoration allows the management of implant surgery phases in a predictable fashion while maintaining the patient in a comfortable, problem-free fixed provisional stage. Occlusal stability and vertical dimension were maintained because of greater wear resistance of the hardened laboratory-processed acrylic and the rigid cast bar reinforcement.

After an acceptable period of time, the occlusion and contours developed in the provisional

restoration were duplicated in the final restoration. ■

Dr. Saba has a private practice in prosthetic and implant dentistry in Montreal, Que. He is also a lecturer at the Faculty of Dentistry at McGill University.

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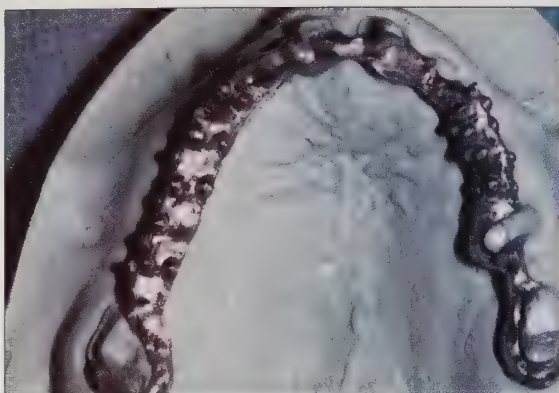


Fig. 7: Cast metal bar on abutment master cast.

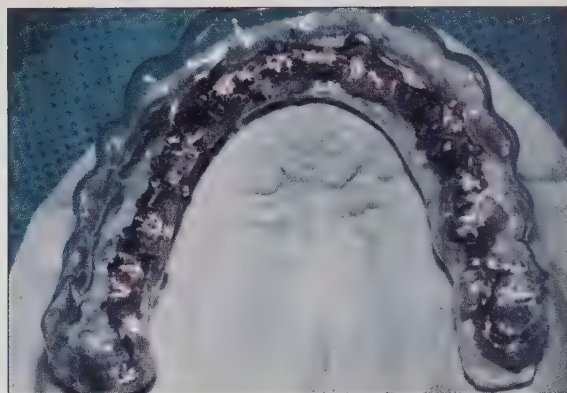


Fig. 8: Transparent index on abutment master cast.

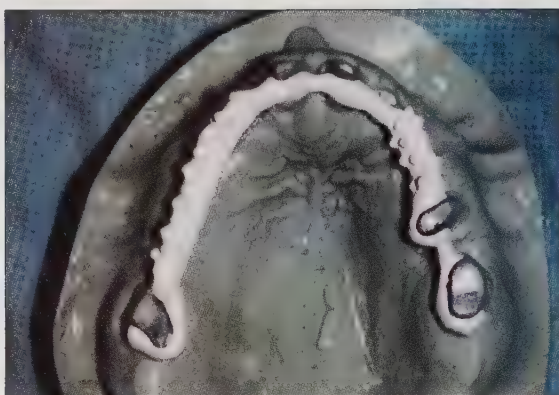


Fig. 9: Opaque applied to cast metal bar.

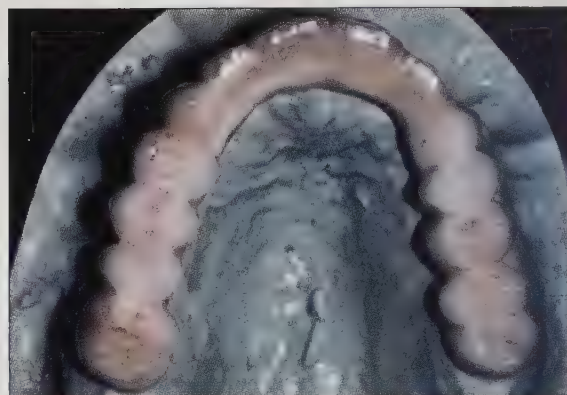


Fig. 10: Completed wax-up of provisional restoration incorporating cast metal bar.



Fig. 11: Completed wax-up of provisional restoration incorporating cast metal bar.



Fig. 12: Heat processed provisional restoration incorporating cast metal bar.

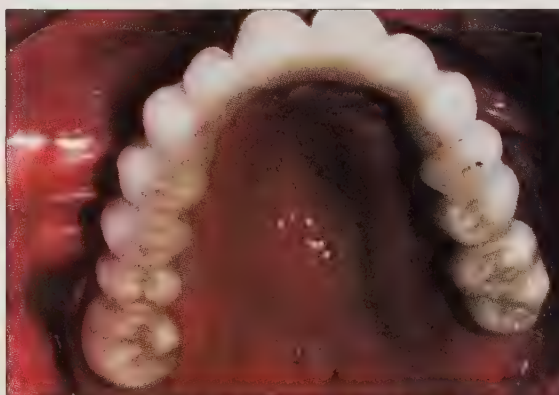
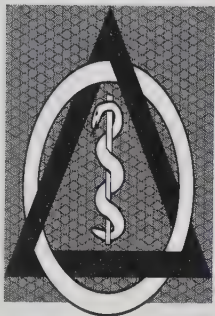


Fig. 13: Intra-oral view of cast metal bar reinforces provisional restoration.

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PROFESSIONAL ISSUES



Public Health Dentistry: 2000 to 2020

Aaron Burry, B.Sc.(h), DDS, MHA, MBA

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Public health dentistry has greatly evolved in Canada since the 1960s. With the widespread introduction of water fluoridation and the development of public education programs, a growing segment of the Canadian population will never experience significant dental problems. Over the next twenty years, the challenge for public health dentistry will be to ensure that all Canadians attain and maintain the highest level of oral health possible. New initiatives are targeting groups at greatest risk of preventable oral health problems. This article looks at some of the current issues in public health practice, with a focus on programs and activities taking place in Ottawa-Carleton.

Fluoride: Refining the Message

The promotion of water fluoridation and fluoride supplements has resulted in a dramatic reduction in decay rates. While strategies to promote daily exposure to fluoride have been highly effective, two issues are emerging that could affect public acceptance of fluoride:

1. Several independent studies have demonstrated an increase in the incidence of fluorosis in children in Canada.

2. Some research has suggested a causal link between fluoride and risk for hip fracture.

Fluoride levels in bone and body systems are dose-related. There are no known health-related implications of prolonged exposure to low levels of fluoride ions. It is important to remember, however, that the practice of adding fluoride to the drinking water and toothpaste is relatively recent. The challenge is to continue to champion the benefits of fluoride while ensuring that any adverse effects connected to overexposure are minimized.

Message to the Public

Fluoride is widely accepted by Canadians as being beneficial to their dental health. If information about the adverse effects of fluoride (fluorosis currently being the only known risk) is not transmitted properly, it will raise unwarranted health concerns. Over the next decade, the message will need to evolve to *maximize the benefits of fluoride while minimizing the risk of potential side effects*. Public education strategies will have to maintain this delicate balance, emphasizing that fluoride is a "therapeutic agent" that must be used at "therapeutic levels" and

where necessary. This message, however, is not without risk and may result in increased calls to reduce or eliminate water fluoridation. Such a reduction would hurt those who need fluoride most.

Role of the Dental Practitioner

The role of the dental practitioner will broaden to include assessing, reviewing, and recording a patient's risk for decay and to "prescribing" an appropriate dose and frequency of fluoride — for example, telling a patient to *use a smudge of this "therapeutic agent" (toothpaste) once a day*.

Harmful Habits

Juices and Soft Drinks

Large sums of marketing and advertising dollars go into promoting the health and social benefits of both fruit juice and carbonated beverages. The cost of these products has dropped significantly over the past decade while their consumption (individual volume and frequency) has increased, especially among teens and children. Because of their high acidity and sugar content, these products can have a devastating impact on oral health when consumed frequently or in large quantities,

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particularly when combined with poor oral hygiene.

Data from annual school surveys (1994-97) of the nutritional habits and dental health of children in high needs schools in Ottawa-Carleton provide some general trends with respect to the intake of liquids:

1. Decreased water consumption substituted with large volumes of fruit juice, sweetened drinks and carbonated beverages.
2. A direct correlation between the proximity of a convenience store and the consumption of drinks other than water.
3. Children of new Canadians (in Canada less than 10 years) are more likely to substitute water and milk with sweetened drinks and carbonated beverages.
4. A significant increase in case reporting of rampant tooth decay, particularly in teens. The most common factor in this group was the consumption of two litres or more a day of carbonated soft drinks containing phosphoric acid and caffeine. (The volume and incidence of daily exposure among teens crosses all socio-economic strata.)

Many schools in Ottawa-Carleton are actively promoting healthier habits and issuing notices to parents advising them not to send juice or other drinks to school, and informing them that convenience stores are off limits during school hours. Schools are also promoting the benefits of water.

Smoking

Dental research has provided increasing evidence of the direct relationship between smoking and periodontal disease. The potential for visible attachment loss or gingival irritation provides a unique opportunity to link smoking with a direct consequence. This new information increases the need for the dental profession to be more involved in advising patients of the potential effects of smoking on their dentition and to connect patients who express an interest in stopping to smoke with other

health care providers or programs specializing in smoking cessation.

Dental Care for Low-Income Canadians

Poor oral health has become a marker for children and others living in poverty in Canadian society. Data from annual school inspections in the Ottawa area reveal that approximately 3% of school children under the age of 14 have an obvious need to see a dentist (clearly visible caries, broken restorations). The picture changes dramatically when only the schools from low-income neighbourhoods are included in the analysis. In moderate and high needs schools — defined as those who have many children from low-income families — 20% of children are in obvious need of care. Of those, 75% are recipients of social assistance. The remaining 25% are largely from low-income families. Approximately two-thirds do not have dental insurance.

While regular professional care is important for everyone, it is particularly critical for those at greatest risk. The participation rate among social assistance recipients in government-sponsored dental plans remains below 30%.¹ While broad-based programs encouraging patients to establish relationships with dentists have been effective for higher income groups, the same result is not seen among low-income groups. The pattern of attending in emergency situations and placing little value on preventive care further strengthens stereotypes and the marginalization of low-income groups with respect to dental care.

Historically, public dental clinics have been established to promote and ensure access. They target populations in need, such as street youth, school children of low-income families, seniors or people living in remote areas. In Ottawa-Carleton, dental clinics for social assistance recipients have been established as one way to reduce social barriers and to ensure that widest possible care is provided even with limited dollars. (This is accomplished by using salaried dental staff.) By the mid-

1990s, the participation rate in this program exceeded 40%. Unfortunately, funding for the program has been reduced for adults and only treatment for urgent conditions is now offered. Approximately 25% of social assistance recipients are eligible for urgent care and attend the clinics annually.

Providing care to individuals actively receiving social assistance is complicated by an array of psychological and social problems. While social spending has been targeted to those in greatest need, recent program reductions are creating further gaps. The role of "public" health will be to find innovative ways to address the needs of all members of our society.

Oral Health Promotion

Oral health promotion efforts continue to focus on increasing awareness of the importance of dental health. One such promotional effort, *Keep Your Teeth For Life*, is targeted to low-income and new Canadians of inner cities.² It is being adapted specifically to Ottawa-Carleton, with posters being designed and placed in strategic locations in the community.

Public clinic activities focus on empowering individuals with the necessary skills to influence their own health. Understanding what good hygiene means and translating this into a daily routine remains problematic. Findings from a number of outreach activities indicate that there is generally a poor understanding of the "mechanics" of brushing and flossing. For example, of 22,000 people surveyed in the regional clinics in Ottawa, 98% responded that you should brush your teeth daily. When asked to demonstrate how they brushed, the majority (about 80%) demonstrated brushing the occlusal surfaces only. A small percentage actually understood what plaque was and how it related to tooth decay. Obviously, proper brushing and flossing are "taught" and "learned" skills. When a grandparent or parent lacks these skills, the children are likely to have poor oral hygiene and to be at far greater risk for dental decay. While many traditional

programs focused on providing oral hygiene education directly to children, efforts now focus on educating teachers, parents and other primary care providers.

Another way of addressing this problem is through brushing clubs in schools. These programs, usually an extension of breakfast clubs, have been shown to improve the oral hygiene status and to reduce the decay rates of participating students. Successful brushing programs require the support of parents, schools, teachers, volunteers and dental products manufacturers. The Health Department in Ottawa supports interested schools by assisting with the organization of the program and connecting them with manufacturers willing to donate essential supplies (toothbrushes and toothpaste).

The Aging Population

There is an existing unmet need for special dental services for the elderly. This need will grow over the next twenty years as the proportion of Canadians over the age of 70 rises dramatically. Many elderly will be able to continue to seek care in traditional private practice settings. Recent promotional activities by organized dentistry and public health have focused on promoting lifelong dental care for seniors. Fortunately, far more Canadians will maintain most if not all their own teeth throughout their lifetime. The tremendous strides in endodontics, implant and prosthetic dentistry have created many beautiful and

artfully reconstructed dentitions. The question now is, How will this work be maintained for individuals in their eighties, nineties and even hundreds if they are no longer able to reasonably attend their usual private dentist? Alternative methods of care delivery need to be developed to ensure that oral health for all Canadians is maintained into their old age. Outreach dental programs currently exist on a very limited scale, one notable example being a program in Montreal where dental teams using portable equipment visit homebound seniors.

Seniors in Health Care Facilities

Institutionalized seniors represent another growing segment of the population requiring access to dental expertise, preventive strategies and care. While some individuals can continue to travel to a dental office, the majority require transfer by ambulance, which is costly, and must be accompanied by support staff. Even when the necessary logistics are arranged in advance, the resident may not be medically or psychologically able to attend the visit when it is scheduled, resulting in lost productivity for dental care providers.

One health factor affecting dental care to seniors in institutions is dementia, which is increasing among the elderly population. Depending on the type of dementia, individuals will tolerate varying degrees of disruptions in their daily routines and their

cooperation can vary greatly within the span of a few minutes. When there is minimal interruption to the daily routine, it is possible to complete routine dental visits that are productive for the dental team and the patient. Otherwise, interruptions can be stressful for both the patient and the providers.

A jointly administered project at Island Lodge, a facility in Ottawa, offers a glimpse of some of the efforts required to address the special needs of the elderly (Table I). Two departments of the Region of Ottawa-Carleton, "Homes for the Aged" and the Health Department, worked cooperatively to establish a dental clinic at Island Lodge. The clinic, which has been operating since January 1997, provides assessments and general dental care to approximately 380 residents. The clinic is staffed by salaried personnel from the Health Department. A dentist, dental hygienist and dental assistant visit weekly to provide care for the residents. The medical coordinator schedules patients in consultation with nursing staff to select an optimal time for the resident and to ensure that appointments do not conflict with other activities. On the day of the clinic, nursing staff prepare residents for the dental visit and transfer patients directly into the dental chair when required. A volunteer assists with the transfer and provides reassurance during the procedure.

Given the extra time needed to work with such a large number of special needs patients, and the fact that no government funding is available, the clinic is operated on a cost-recovery basis with the residents paying for their dental care. For every hour of clinic time, an additional hour must be dedicated to organizing the logistics of the dental visit, preparing letters to families outlining the options and cost of care, and the implications of not proceeding with rudimentary treatment or prevention. Conferences with families and staff are a routine part of providing services.

The need to expand services for this segment of the population is

Table I

Comparison of Admission Factors at Island Lodge Long-Term Care Facility

	1985	1998
Average age of residents	75	86
Average length of stay (years)	7	4
Percentage of residents with dementia as primary reason for admission	30%	70%
Percentage of residents admitted due to frailty or inability to provide self-care	70%	30%
Percentage of residents with complete dentures at admission	70%	30%

growing. In Ottawa-Carleton, the number of long-term care beds will increase by over 600 in the next three years to address the current shortage. Plans are underway to expand dental services to the other regionally administered facilities; however, this represents only a fraction of the total facilities in Ottawa, many of them privately operated.

Other changes affecting seniors will have an impact on the delivery of dental care:

1. Improvements in home care have allowed many individuals to live in their own homes indefinitely.
2. There is a general lack of chronic care placements in Canada. Many individuals will be "temporarily" placed in facilities where oral health care may be a low priority.

Unfortunately, individuals coming into long-term care settings are either far frailer or in later stages of dementia than when compared to the mid-1980s. Many will also arrive at facilities after a considerable period without regular care. This evidence further supports the need for more outreach programs to assist seniors.

Skills For Practitioners

There is no shortage of need or demand for initiatives to address the oral health needs of Canadians. Individuals wishing to work with populations at greatest risk require the same core skills that are needed to establish and maintain a successful private dental practice. Additional demands when working in the public health environment include:

Communication Skills

- The ability to explain often complex subjects in an accessible and understandable manner.
- The ability to demonstrate empathy, caring and understanding.
- The ability to care for individuals whose lives are often in turmoil and whose behaviour is socially inappropriate (need for conflict resolution and negotiation skills).

Organization Skills

- The ability to achieve consensus and to motivate others to understand the importance of oral health and the actions needed to attain optimal oral health.

Addiction Training

- The ability to understand the emotional and social (not just pharmacological) issues related to addiction. ■

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Adapted from a presentation at the CDA/DCF Canadian Dental Students Conference, June 1998.

The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

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INFORMATION PACKAGE

The CDA Resource Centre has information packages on the following topics: fluoridation, nutrition, tobacco and dental care for the geriatric patient. CDA members can order these materials by contacting the Resource Centre at:

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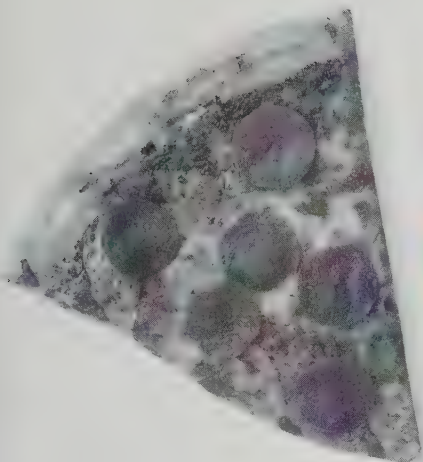
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Death, Taxes and Your Heirs — Preserving Your Estate Through Permanent Life Insurance

Benjamin Franklin's statement that "in this world nothing is certain but death and taxes" is well known. But what may not be ingrained in our minds is the fact that taxes could place a potentially devastating financial burden on our loved ones when we die.

Without the right type and amount of life insurance coverage to help your family cope with the tax consequences of bequeathing them certain kinds of assets, it could be financially difficult, if not impossible, to have your assets distributed as per your intentions.

To illustrate this point, consider the following simplified hypothetical case:

Peter is a 55-year-old dentist who lives with his wife Cathy. Thanks to the success of his practice, Peter is doing very well financially as he approaches retirement. He has already helped fund the university education of two of his three children — Lisa and Stephanie, who have graduated and embarked on their careers. His teenage son David will soon begin his post-secondary studies.

In addition to his RRSP investments, Peter fortuitously invested \$30,000 in a stock portfolio several years ago that is today worth \$330,000. He also has a hobby that proved to be profitable. An automotive enthusiast, Peter bought a vintage sports car at an auction early in his career for \$10,000. Since he refurbished the car, it would now fetch a price of \$110,000. The only time he drives

this vehicle is during summer excursions to the cottage — another of his assets that has significantly appreciated in value. Purchased for \$160,000, the market value of the family cottage is now \$360,000.

Then suddenly, both Peter and his wife are involved in an accident. Cathy dies instantly, while Peter succumbs to his injuries six weeks later. Among the stipulations in Peter's will to help equalize the estate among his surviving heirs is that Stephanie receive the cottage, David receive the sports car and that Lisa receive the money from his stock portfolio. Peter had purchased sufficient coverage in the Basic Life Insurance plan from the Canadian Dentists' Insurance Program to cover such matters as his funeral expenses, outstanding business expenses and money for his son's future education. In preparing his will, however, Peter didn't consider the crushing financial effect his bequests would have on his family due to tax laws and had done nothing to prepare for this situation.

As a result of what is known as a "deemed disposition," the government assumes you have effectively sold everything you own at a fair market value when you die. It then demands taxes on the capital gains (the growth in the value of an asset) on certain assets. The capital gain on Peter's cottage, for example, is \$200,000. Seventy-five per cent of the capital gain (\$150,000) is taxable. Since Peter was in the

top (50 per cent) tax bracket, the tax owing on the cottage is about \$75,000. Using the same calculations, the tax owing on his stock portfolio is around \$112,500, and \$37,500 for the car.

The total value of these three assets alone is \$800,000. His estate, however, is left with a combined tax bill of nearly a quarter of a million dollars. This is in addition to probate fees the estate must pay, which in this case, will be well over \$10,000.

So how will Peter's children arrange for the payment of these taxes? The unfortunate reality is that they would likely be forced to sell the cottage or car, or surrender money that was intended to make their future brighter just to cover the taxes on these assets. However, had Peter obtained permanent insurance (or prepared to have these taxes paid through other means), his family may have been able to avoid this burden — even if he had died at a very old age.

Permanent insurance is one of the two general categories of life insurance, with the other being term insurance. While both pay a lump sum of money for the coverage amount insured, each of the insurance plans is designed to address different needs.

Both of these types of life insurance are available to dentists through the Canadian Dentists' Insurance Program. The term insurance available through the Program is called Basic Life Insurance, while (contrary to what



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its name suggests) Term 100 Insurance is permanent insurance.

The Basic Life plan offers economical premiums and an option that allows you to increase your coverage without a medical at certain times in your life. Among the distinctive features of the Program's Term 100 Insurance plan are lower premiums compared to many other permanent insurance plans on the market, an indexing option that allows you to increase your coverage without a medical, and a joint life plan that allows you to economically cover a second person (such as your spouse) under one insurance certificate. The joint plan is ideal for covering capital gains tax liability since this liability will not be triggered until the second spouse dies.

Term Insurance

Term life insurance is designed to address temporary needs (which could possibly span decades) — such as providing money to raise your children should you die before they become adults and begin working, as well as funds to cover your funeral expenses and outstanding debts. Premiums for term insurance are typically cheaper when you're young and healthy, and increase as you age. Since (under the Program's Basic Life Insurance plan) this insurance begins to reduce at age 65 and ends at age 80, it is not suited for estate planning.

Permanent Insurance

On the other hand, permanent insurance is designed to provide you with insurance for your whole life, and has premiums that stay the same from year to year.

One of the main purposes of permanent insurance is for estate planning. Essentially this means having a pool of money available for your family to pay for the taxes on your assets due at your death so that your heirs will receive what you intended. However, permanent insurance may also be particularly useful if your spouse is much younger than you, if you had children late in life or if you have a child with a disability who will need care after you are gone. As well, if you don't have assets to leave to your heirs, but would like

to leave them with a substantial bequest, permanent insurance provides a method.

Permanent insurance also offers advantages if you wish to leave money to charity. For example, if you wish to leave a charitable donation to the Dentistry Canada Fund to help finance the education of future Canadian dentists, you could do so in a tax-efficient manner by obtaining permanent insurance.

There are two ways you could accomplish this. One method is to make the charity the sole beneficiary of your insurance — which would make your premiums tax-deductible. Another way is to name your estate as the beneficiary of your insurance and have your will dictate the amount of money you wish to donate to the charity. Under current tax laws, the life insurance payment to the charity will count as a charitable donation made in the year of your death, which will count as a tax credit to offset your taxable income (including deemed capital gains) in your final year.

When determining how much permanent life insurance coverage you need, consider consulting your financial planner, as there may be complex variables that apply to your particular estate planning needs.

Depending on your situation, you may wish to obtain both these types of life insurance plans. When you're younger, consider purchasing Basic Life term coverage at a lower premium than what you would pay for permanent coverage. Then, as you enter your forties, and begin thinking about protecting your estate, you may consider purchasing Term 100 permanent insurance. As your temporary needs for term coverage begin to diminish — for instance, your children have all finished school and are working — you can reduce your Basic Life coverage amount accordingly over time.

For more information on the life insurance plans available through the Canadian Dentists' Insurance Program, contact CDSPI at 1-800-561-9401 or (416) 296-9401, extension 234. ■

I'm doing some
housecleaning
in the back
of your mind...



Hi! It's me, your conscience. Between old phone numbers, song lyrics, and lame excuses, there's a lot of clean up to do!

But there are also great things back here. Look! A desire to help out a friend, a wish to give time to a worthy cause, the intention to help your community and your neighbours — and more!

Let's move this stuff up to the *front* of your mind and use it to change the world. Helping causes we care about will be a breeze without all the clutter, so let's get to it!

Oh, and by the way, that little widget you can't find is in the back of your top dresser drawer...



Imagine is a
national program to encourage
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Got Trouble? Get Help – Free

Members' Assistance Program

Everyone has times when personal situations threaten to become overwhelming. That's why the Members' Assistance Program provides no-cost, confidential help from non-dentist professionals for participants in the Canadian Dentists' Insurance Program and their family members.

On issues ranging from family relationships to financial matters.

To get more information on the Members' Assistance Program call CDSPI at 1-800-561-9401 or (416) 296-9401.

B.C. residents call Professional Integrated Insurance Services at

1-888-318-8188 or (604) 322-9001.

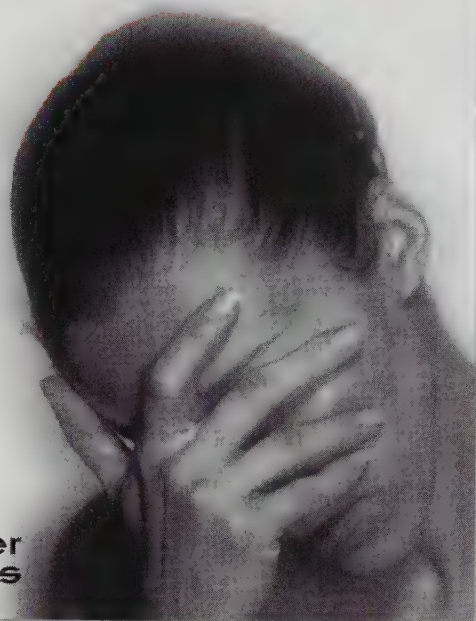


CDSPI

E-mail: cdspi@cdspi.com

Internet: www.cdspi.com

 **Member
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With all the "henceforths" and "notwithstanding" in insurance policies, it can be very difficult to understand just what you're getting. But deciphering the fine print can be easy. Simply contact CDSPI's Insurance Review Service. You'll receive expert evaluations of the insurance policies you're considering, *free of charge*. CDSPI will arrange for an independent reviewer to evaluate policies or proposals you send in, so you'll know if you're getting good coverage and a fair price.

Looking to make an informed decision about your insurance coverage?

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to arrange for your insurance review.**

**B.C. residents call Professional Integrated Insurance Services
at 1-888-318-8188 or (604) 322-9001.**

E-mail: cdspi@cdspi.com Internet: www.cdspi.com



CDSPI

 **Member
Services**

Journal

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CANADIAN DENTISTS' INVESTMENT PROGRAM

CDA FUNDS*

CHECK OUT OUR PERFORMANCE

✓ Superior Long-Term Returns ✓ Leading Fund Managers ✓ Low Fees

*CDA Funds can be used in your CDA RSP, CDA RIF and CDA Seg Fund Account

CDA Fund Performance (for period ending January 31, 1999)					RRSP Eligible
	1 year	3 years	5 years	10 years	
CDA CANADIAN GROWTH FUNDS					
Aggressive Equity Fund (Altamira)	-14.9%	8.1%	n/a	n/a	✓
Common Stock Fund (Altamira)	9.4%	6.6%	5.8%	7.9%	✓
Canadian Equity Fund (Trimark) ^{†1}	-6.9%	6.3%	6.2%	9.6%	✓
Special Equity Fund (KBSH) ^{†2}	6.1%	30.6%	22.7%	n/a	✓
TSE 35 Index Fund (Sun Life of Canada) ^{††}	5.6%	14.6%	12.4%	9.5%	✓
CDA INTERNATIONAL GROWTH FUNDS					
Emerging Markets Fund (KBSH)	-19.8%	-21.3%	n/a	n/a	✓
European Fund (KBSH)	32.0%	24.2%	n/a	n/a	✓
International Equity Fund (KBSH)	18.9%	9.4	n/a	n/a	✓
Pacific Basin Fund (KBSH)	7.5%	1.4	n/a	n/a	✓
US Equity Fund (KBSH) ^{†3}	23.3%	24.9%	19.9%	18.9%	✓
Global Fund (Trimark) ^{†4}	1.0%	10.1%	11.9%	15.0%	✓
Global Stock Fund (Templeton) ^{†5}	5.9%	n/a	n/a	n/a	✓
S&P 500 Index Fund (Sun Life of Canada) ^{††}	35.5%	31.9%	26.7%	21.1%	✓
CDA INCOME FUNDS					
Bond & Mortgage Fund (Canagex)	6.7%	7.8%	7.1%	10.1%	✓
Fixed Income Fund (McLean Budden) ^{†6}	7.3%	9.9%	8.3%	10.8%	✓
CDA CASH AND EQUIVALENT FUND					
Money Market Fund (Canagex)	4.4%	3.9%	4.7%	6.8%	✓
CDA GROWTH AND INCOME FUNDS					
Balanced Fund (KBSH)	6.5%	11.3%	9.2%	9.8%	✓
Balanced Fund NR (KBSH) ^{†††}	n/a	n/a	n/a	n/a	
Ethical Balanced Pooled Fund (Ethical Funds) ^{††††}	0.0%	12.0%	9.4%	n/a	✓

CDA figures indicate annual compound rate of return. All fees have been deducted. As a result, performance results may differ from those published by the fund managers. CDA figures are historical rates based on past performance and are not necessarily indicative of future performance.

[†] Returns shown are those for the following funds in which CDA funds invest: ¹Trimark Canadian Fund, ²KBSH Special Equity Fund, ³KBSH US Equity Fund, ⁴Trimark Fund, ⁵Templeton Global Stock Trust Fund, ⁶McLean Budden Fixed Income Fund.

^{††} Returns shown are the total returns for the indexes tracked by these funds.

^{†††} Introduced in September 1998.

^{††††} The CDA Ethical Balanced Pooled Fund invests in a fund that mirrors the Ethical Balanced Fund (Ethical Funds).

For current unit values and GIC rates call CDSPI toll-free at 1-800-561-9401, ext. 350 or visit the CDSPI website at www.cdspi.com.

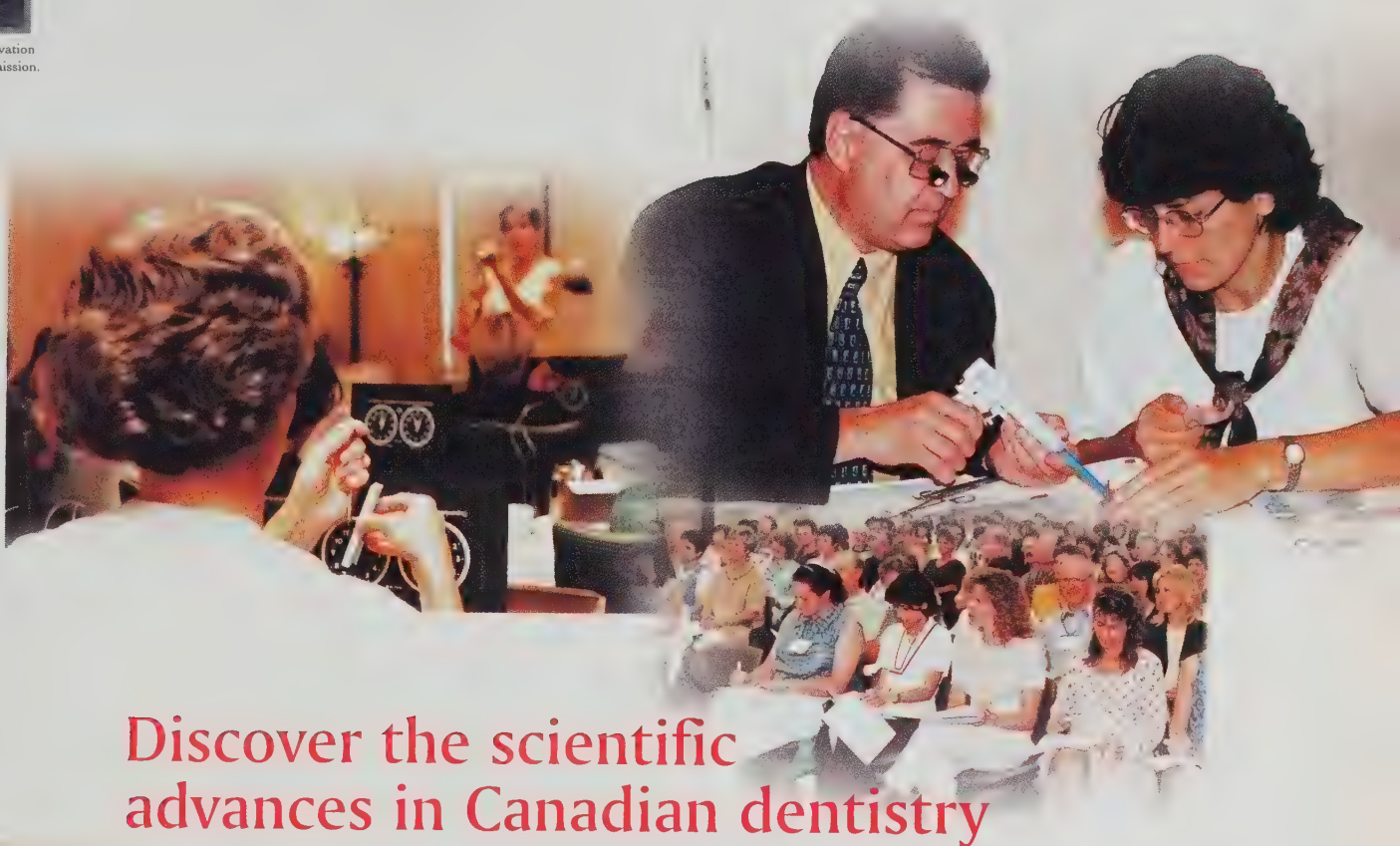




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CDA Convention Halifax, Nova Scotia

August 5-8, 1999 Hosted by the Nova Scotia Dental Association



Discover the scientific advances in Canadian dentistry

The 1999 CDA Convention, hosted by the Nova Scotia Dental Association, is your opportunity to learn about the latest and greatest scientific breakthroughs in Canadian dentistry. The CDA Convention, in the World Trade and Convention Centre located on George Street, allows you to stay on top of scientific developments in the dental profession. This year's scientific program will cover topics ranging from clinical issues to practice management and will feature 28 speakers, including Jeffrey Sherman, who will speak on the subject of oral surgery; Michael Suzuki, whose topic will be esthetics; and Barbara Steinberg will do a presentation on treating female patients. Take in one of the many dental clinics and observe the newest dental procedures. We look forward to seeing you at the Convention.

Exhibitors

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For more information contact CDA Convention at 1-800-267-6354 or (613) 523-1770 Fax: (613) 523-3062 Web site: www.cda-adc.ca For hotel reservations, please call 1-800-465-5355.

Book your flight with Canadian Airlines and mention the code 01850 to obtain convention rates.

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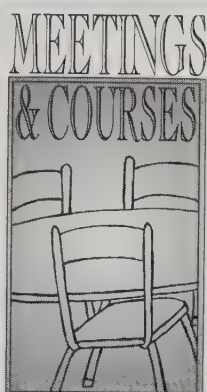
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INTERNATIONAL



April 21-24

Irish Dental Association Annual Scientific Conference in Cork City, Ireland. Contact Margaret Ferguson, Irish Dental Association, 10 Richview Office Park, Clonskeagh Road, Dublin 14, Ireland. Tel.: 011 353 1 2830499; fax: 011 353 1 2830515.

April 21-25

21st Asia Pacific Dental Congress in Singapore. Contact the Asia Pacific Dental Federation, Office of the Secretary General, APDF/APRO, 242 Tanjong Katong Rd., Singapore 437030, Republic of Singapore. Fax: 3442116; e-mail: bibi@pacific.net.sg

April 29 - May 1

1999 British Dental Association National Dental Conference in Torquay, UK. Contact Charlotte Long, Conference Office, British Dental Association, 64 Wimpole St., London W1M 8AL, U.K.. Tel.: 171 486 0875; fax: 171 486 0855; e-mail: c.long@bda-dentistry.org.uk

June 23-25

Stomatology '99 — International Dental Exhibition and Conference in St. Petersburg, Russia. Contact the International Trade and Exhibitions Group, Health Care Division, Byron House, 112A Shirland Rd., London W9 2EQ, U.K. Tel.: 171 286 9720;

fax: 171 266 1126; e-mail: healthcare@ite-exhibitions.com

June 24-26

6th International Dental Congress of the Turkish Dental Association in conjunction with the World Dental Federation (FDI) in Istanbul, Turkey. Tel.: 90 212 224 40 36; fax: 90 212 232 37 63; e-mail: dentalforum@viptourism.com.tr; Web site: www.dentalforum.vip tourism.com.tr

August 12-15

Nanjing International Dental Symposium in Nanjing, China. Contact: Dr. Peikang Dai, 644 Spadina Ave., Toronto, ON M5S 2H4. Tel.: (416) 975-0472; fax: (416) 921-5918; e-mail: peikang.dai@utoronto.ca

CANADA



April 16

How To Help Your Patients Be Tobacco-Free: A Practical Team Approach in Ottawa, Ont. Contact Margaret Masson-Schwenger, Region of Ottawa-Carleton Health Department. Tel.: (613) 722-2242, ext. 3506.

April 31 and May 1

Meeting of the Southern Ontario Surgical Orthodontic Study Group in Windsor, Ont. Contact Dr. Jeff Berger. Tel.: (519) 258-2632; fax: (613) 258-2637; e-mail: jberger@mnsi.net

May 1

Class of '69 Reunion (University of Toronto) in Toronto, Ont. Held in conjunction with the ODA Convention. Contact Peter Brymer. Tel.: (416) 964-1337; fax: (416) 964-9519; e-mail: peter.brymer@utoronto.ca

June 18-19

18th Annual Meeting of the Academy for Sports Dentistry in Toronto, Ont. Contact Susan Ferry, tel.: (217) 824-4990; fax: (217) 824-6819; or Dr. Frank Stechey, tel.: (905) 577-0770; fax: (905) 577-0721.

July 15-18

Canadian Psychological Association to Host AIDS Impact 1999 in Ottawa, Ont. Contact AIDS Impact 1999 Secretariat, 151 Slater St., Suite 205, Ottawa ON K1P 5H3. Tel.: (613) 237-2144; fax: (613) 825-0530; Web site: www.aidsimpact.com

September 17-19

59th Northern Ontario Dental Convention in North Bay, Ont. Contact Dr. R.W. Denston, 391 Airport Rd., North Bay, ON P1B 8W8. Tel./fax: (705) 472-1771.

October 15-16

International Dental Symposium — Team Spirit 1999 in Toronto, Ont. Sponsored by the Association of Prosthodontists of Canada and the Association of Registered Dental Technologists. Contact Dr. Morley Rubinoff, Team Spirit 1999, 5 Fairview Mall Dr., Suite 205, Willowdale, ON M2J 2Z1. Tel.: (416) 434-9099; fax: (416) 499-1751; e-mail: MSRubinoff@AOL.com

U.S.A



April 23-26

Minnesota Dental Association's Star of the North Meeting in Saint Paul, Minn. Contact the Star of the North Meeting, 2236 Marshall Ave., Saint Paul MI 55104. Tel.: (651) 646-7454; fax: (651) 646-8246; e-mail: mndental@mn.uswest.net





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CDA Convention Halifax, Nova Scotia

August 5-8, 1999 Hosted by the Nova Scotia Dental Association



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The 1999 CDA Convention, hosted by the Nova Scotia Dental Association, is your opportunity to see the latest in dental equipment and procedures first-hand. The CDA Convention, in the World Trade and Convention Centre located on George Street, boasts exhibitors from across North America. Our keynote speaker, Dr. Joe McInnis, the first man to scuba dive under the North Pole, will speak from the exhibition floor about teamwork, business, and life in general. Peter Luckett from Pete's Frootique will join us to prepare some culinary delights and share some terrific recipes and business advice in his entertaining "Chop 'n Chat" seminar, also held on the exhibition floor. Take in the exhibits and discover new office design ideas, the latest in dental technology, and special convention rates offered to convention delegates. Delegates will also be eligible for prizes drawn from the exhibit floor. We look forward to seeing you at CDA's annual convention.

Scientific Program

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Social Program

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For more information contact CDA Convention at 1-800-267-6354
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For hotel reservations, please call 1-800-465-5355.

Book your flight with Canadian Airlines and mention the code 01850
to obtain convention rates.

DENTAL MEETINGS



April 29 - May 1

**Ontario Dental Association
132nd Annual Spring Meeting** in
Toronto, Ont. Contact Diana Thor-
neycroft. Tel.: (416) 922-4162,
ext. 346; fax: (416) 922-9005;
e-mail: pdasm@oda.on.ca

May 25-30

**93rd Annual Dental Conference
and Annual General Meeting of
the Alberta Dental Association** in
Jasper, Alta. Contact Dr. G.W.
Thompson. Tel.: (780) 432-1012;
fax: (780) 433-4864.

May 27-29

**Prince Edward Island Dental Asso-
ciation Annual Meeting** in Wood-
stock, P.E.I. Tel./fax: (902) 892-4470.

May 29 - June 2

**28^e Congrès annuel de l'Ordre
des dentistes du Québec** in Mont-
real, Que. Contact Nicole Pagé.
Tel.: (514) 875-8511; fax: (514)
393-9248.

June 4-5

**New Brunswick Dental Society
Annual Meeting** in Saint John, N.B.
Contact Barb Wishart. Tel.: (506)
452-8575; fax: (506) 452-1872.

June 18-19

**Nova Scotia Dental Association
Annual Meeting** in Pictou, N.S.

Contact Steve Jennex. Tel.: (902)
420-0088; fax: (902) 423-6537.

August 5-8

**Canadian Dental Association
Convention** in Halifax, N.S. Contact
Katharine Acs. Tel.: 1-800-267-
6354, ext. 2252 or (613) 523-1770,
ext. 2252; fax: (613) 523-3062.

Notices of meetings and continuing
education courses are published
without charge for appropriate
not-for-profit dental organizations,
teaching facilities or recognized
study clubs. Information must be
received two months prior to the
expected publication date, and will
be published at the discretion of the
editor. Send all requests c/o Rachel
Galipeau, Journal editorial assistant,
Canadian Dental Association, 1815
Alta Vista Dr., Ottawa, ON K1G 3Y6.

Canadian
Dental
Association



L'Association
dentaire
canadienne

ARE YOU A NEW DENTIST?

INTERESTED IN BECOMING A COMMITTEE MEMBER?

The Canadian Dental Association maintains a data bank of new dentist members who are interested in becoming involved in the activities of their national organization. New dentists are defined as members who have graduated within the last 10 years.

Currently, only four per cent of CDA's committee, council and board members are new dentists, even though new dentists account for 28 per cent of the association's membership. CDA is attempting to increase the proportion of new dentists serving in CDA's political structure to correspond with the proportion of new dentists in CDA's total membership.

If you are interested in serving as a member of one of CDA's committees, please write to CDA, attention Nadia Bassi, Coordinator, Corporate Councils, enclosing a current curriculum vitae. Your name will then be added to the data bank for consideration when vacancies arise. Should your name be chosen, you will be contacted for further confirmation of your interest in serving.

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CONTINUING DENTAL EDUCATION IN CANADIAN DENTAL SCHOOLS

College of Dental Surgeons of Saskatchewan (for the University of Saskatchewan)

Continuing Dental Education
202-728 Spadina Cres. E.
Saskatoon, SK S7K 4H7
Tel.: (306) 244-5072
Fax: (306) 244-2476
E-mail: cdss@sk.sympatico.ca

Dalhousie University

Faculty of Dentistry
Continuing Education Office
5981 University Ave.
Halifax, NS B3H 3J5
Tel.: (902) 494-1674
Fax: (902) 494-2527
Web site: <http://www.dentistry.dal.ca/CDE/CDE.html>

Laval University

Continuing Education Office
Louis-Jacques-Casault Building
Suite 4731
Quebec, QC G1K 7P4
Tel.: (418) 656-3202
Toll-free (Canada): 1-800-561-0478, ext. 3202
Fax: (418) 656-5538
Web site: <http://www.ulaval.ca/fmd/continue.html>

McGill University

Faculty of Dentistry
3640 University St., M/29
Montreal, QC H3A 2B2
Tel.: (514) 398-7221
Fax: (514) 398-8900
E-mail: chodan@med.mcgill.ca
Web site: http://www.mcgill.ca/dentistry/cont_ed.html

University of Alberta

Office of Continuing Dental Education
4063 Dentistry/Pharmacy Building
Faculty of Medicine and Oral Health Sciences
Edmonton, AB T6G 2N8
Tel.: (403) 492-5023 (Dr. Steve Patterson or Ms.
Debbie Grant)
Fax: (403) 492-1624
E-mail: contdent@gpu.srv.ualberta.ca
Web site: <http://www.dent.ualberta.ca/continue-ed/index.htm>

University of British Columbia

Continuing Dental Education
Room 105 - 2194 Health Sciences Mall
Vancouver, BC V6T 1Z3
Tel.: (604) 822-2627
Toll-free (Canada): 1-800-633-9991
Fax: (604) 822-4835
E-mail: virginia@cehs.ubc.ca
Web site: www.dentistry.ubc.ca/continuing_ed/conedu.htm

University of Manitoba

Continuing Dental Education
Faculty of Dentistry
780 Bannatyne Ave.
Winnipeg, MB R3E 0W2
Tel.: (204) 789-3331
Fax: (204) 789-3912
E-mail: duggan@ms.umanitoba.ca

University of Montreal

Continuing Dental Education C-207
Faculty of Dentistry
c/o Dr. Salam Sakkal
P.O. Box 6128, Downtown Station
Montreal, QC H3C 3J7
Tel.: (514) 343-6701
Fax: (514) 343-6918
E-mail: brunettd@medent.umontreal.ca
Web site: <http://www.scedu.umontreal.ca/FSE/CFCONT/Index5.HTM>

University of Toronto

Continuing Education
124 Edward St., Room 527
Toronto, ON M5G 1G6
Tel.: (416) 979-4902
Toll-free: 1-800-743-3788
E-mail: cde@dental.utoronto.ca
Web site: http://www.utoronto.ca/dentistry/Continuing_Dental_Education/continuing_dental_education.html

University of Western Ontario

Faculty of Medicine and Dentistry
Continuing Education and Professional Development
Room H104, Health Sciences
London, ON N6A 5C1
Tel.: (519) 661-2111, ext. 6222
Toll-free (Canada/US): 1-888-281-1428
Fax: (519) 661-3797
Web site: <http://dentistry.uwo.ca/cde/>



resources and staff management? Well, I know that some offices employ a large number of people and some a lot less. Staff positions may include office managers, receptionists, one or two hygienists, an assistant, and perhaps a lab technician. Do I know the first thing about how to employ somebody? What to look for in a team member? How do I help maintain healthy attitudes and keep the staff happy? Do I know the legal workings involved in dismissing a staff member or negotiating with one if problems arise? Do I have the proper negotiation and conflict resolution skills to deal with these situations?

The answer to all of the preceding questions is simple: No! If I had decided that I wanted to operate a small to medium-sized business when I was choosing a career path, I would have gone to busi-

ness school, or at the very least taken some business courses. Now I find myself graduating from dental school having to deal with issues such as marketing, contracts (office leasing and employment), associating and staffing, to name just a few — subjects that are thoroughly taught to individuals seeking a career in business.

So, when all is said and done, who is responsible for educating dentists on how to run their business? Are dentists expected to be self-taught on the subject? Should those who wish to become more educated be referred to the business faculty of their university or to private institutions for such training (and, as a result, face a bigger debt load because they wish to be better prepared)? Or should dental schools take responsibility for educating their students and seek out

qualified individuals who will teach them about the "other part" of their profession?

Some schools, it is true, do offer a good grounding in practice management. The fact is, however, that most dental programs are deficient in this area. Practice management education should be incorporated into the accreditation process for all dental schools in order to standardize the quality of education across the country. ■

Andrew Kay and Deborah Saunders are members of CDA's Committee on Student Affairs.

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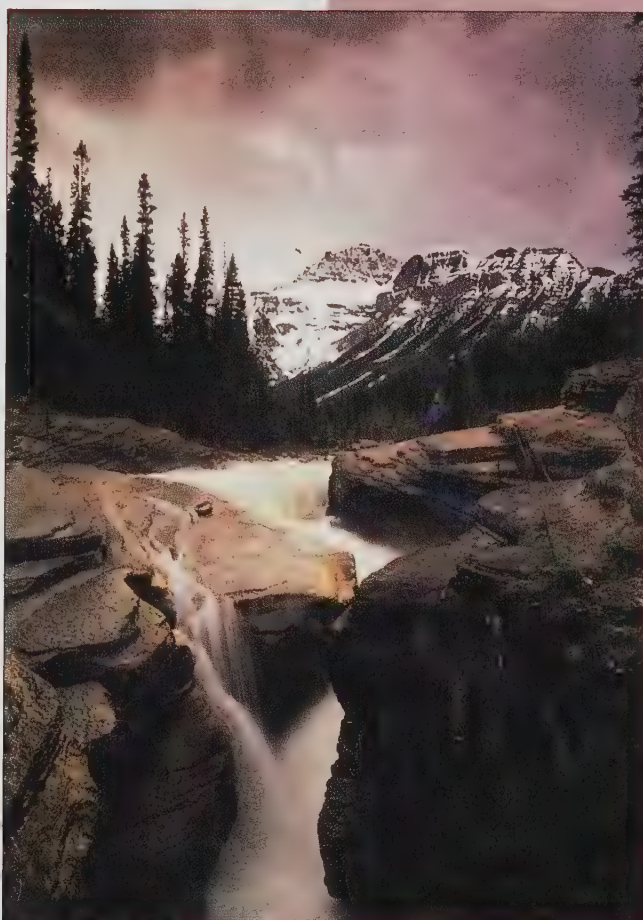
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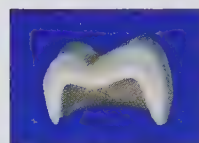


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¹ Biaxial flexural strength and indentation fracture toughness of three new dental core ceramics
Wagner WC, Chu TM; University of Michigan (JPD 1996; 76: 140-4)

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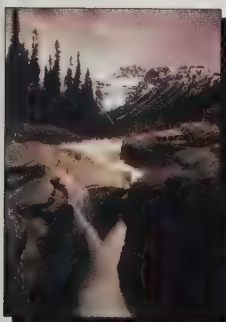
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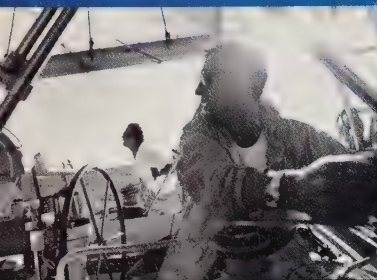
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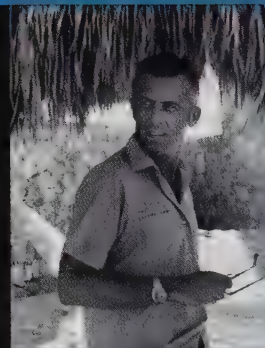
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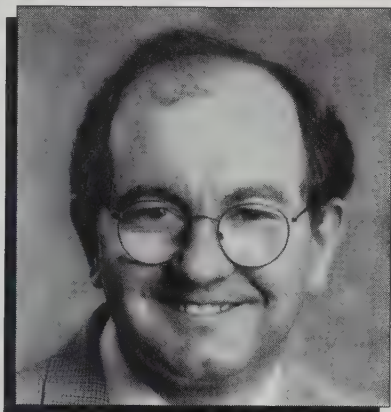
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EDITORIAL

THE FINE ART OF JUGGLING



Dr. John P. O'Keefe

Imagine the editor of a clinical journal getting a phone call from a dental faculty member who has just completed a clinical trial of some dental materials. He wants to know if the editor would be interested in receiving a paper, for consideration by the journal, that shows that one of these materials clearly does not do what the manufacturer claims it can do.

The caller indicates to the editor that he feels the results of this trial would make some people very unhappy and that publishing this paper would carry risks both for himself and for the journal. The editor asks him the name of the manufacturer of the material and finds out that the company is one of the major advertisers in the journal.

The editor's mind is racing during the telephone conversation, weighing the consequences of publishing (or not publishing) such an article. The journal depends on advertising revenues to cover production and distribution costs; publishing the article may cause this manufacturer to withdraw future advertisements in the journal. Other advertisers may follow suit because the editor may get a reputation for being "difficult" to deal with. The publishers

of the journal may be less than pleased with the editor, especially if they held high hopes about his ability to increase the viability of the publication.

If the editor decides not to consider the manuscript for fear of alienating advertisers, the author will think the editor enjoys too cozy a relationship with manufacturers and may never submit another article to the journal. People in academic circles talk to each other on a regular basis; it won't be long before the reputation of the journal will be tarnished in that community. This may have the effect of diminishing the future supply of clinical and scientific articles so important for the development of the publication.

In the short term, readers of the journal may not know about the unfolding of this little drama; yet they are the ones using the materials, described in the clinical trial, on a daily basis. Let's presume for a moment that the results of this clinical trial are valid. These very readers may continue to use the deficient material unaware of problems with it. The editor's finely honed conscience tugs at him — he feels a moral obligation to inform these dentists and help them provide optimal treatment for their patients.

In my last editorial, I mentioned that my job is to try to "satisfy the needs of readers, authors and advertisers (if possible!)." I added the caveat because the needs and desires of these groups may diverge from time to time, as demonstrated in the hypothetical case presented above. In juggling the competing interests of the *Journal's* stakeholders, my role is essentially "political" in nature. The great and the less noble have learned through bitter experience that political activity can be a humbling and frustrating pursuit.

So, who are the stakeholders of the *Journal*, what are their needs, and how do we keep all parties satisfied? I believe the main interested parties are: you, the readers,

the authors of articles, the advertisers, and the Canadian Dental Association.

Readers want up-to-date information that is pertinent to dental practice and the profession of dentistry. Authors want to publish their work in a prestigious publication and get some reward for their labours. University-based authors may feel adequately rewarded if their contributions to the *Journal* are recognized by their faculty's tenure and promotions committee.

Advertisers want to get information across to readers about the services or products they have to offer to dentists. In publishing the *Journal*, CDA wants to fulfil its mission statement and create a positive image for the Association and the Canadian dental profession.

How would I handle the situation faced by our hypothetical editor? Firstly, I believe that the article should be considered for publication. I would submit the article to review by two experts who are peers of the author and experienced in conducting clinical trials. I would also consult a statistics expert, to be sure the statistical methods used to arrive at the conclusions were appropriate. If the manuscript came through review with solid recommendations to publish, I would schedule the article to appear in the next edition of the *Journal*.

As a courtesy to the manufacturer whose product was found to be deficient, I would alert the scientific director of the company that the study was going to appear in the next edition of the *Journal*. I would show the director the final revised edition of the manuscript along with the reviewers' comments (without revealing names).

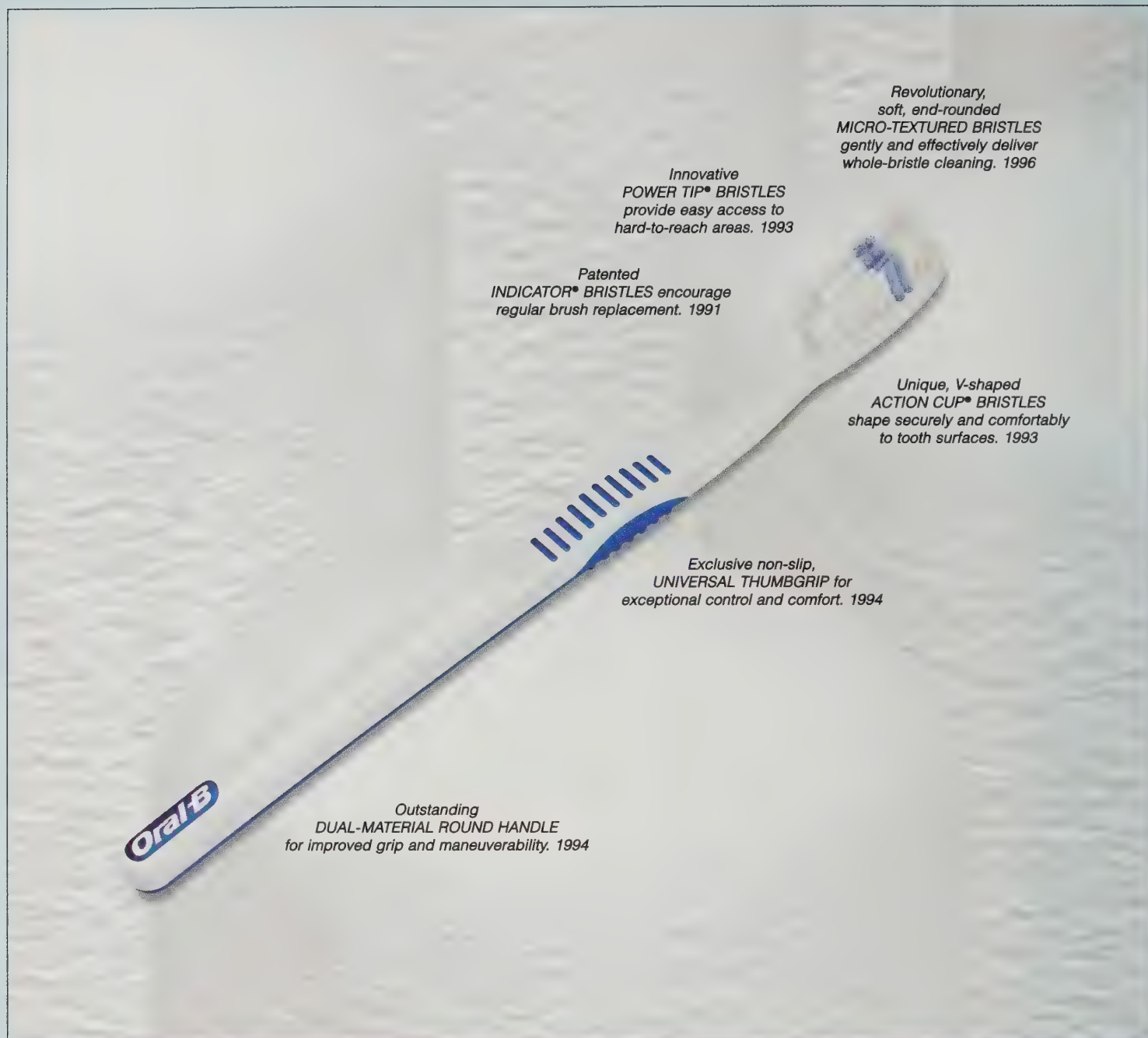
I believe this course of action would be transparent and fair to all stakeholders. What would you advise?

John O'Keefe
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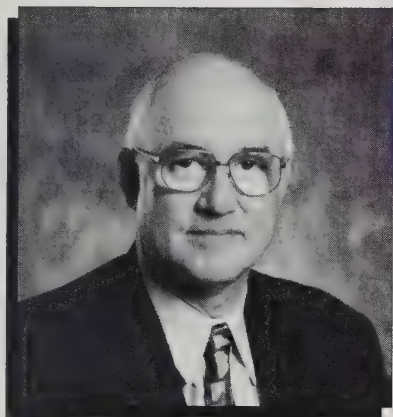
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PRESIDENT'S COLUMN

DCF AND THE PRESIDENT'S GOLF CHALLENGE



Dr. Richard D. Sandilands

Some months ago, I sent out a President's Letter asking for your support of the Dentistry Canada Fund (DCF), the official charitable organization for the dental profession in Canada. In my letter, I stated that it is vital for all of us to give something back to the profession. Dentistry has been a fountain of success for dental professionals who have been fortunate enough to live and work in Canada. Notwithstanding that success, we have a responsibility to ensure that those who require financial support to reach their goals in various fields of endeavour within our profession are able to access those funds as necessary.

DCF is an amalgamation of several smaller charitable funds, including the original Canadian Fund for Dental Education, the Canadian Dental Foundation, and the Dental Research Fund. DCF is still very young, and has only recently begun the process of positioning itself to move into the next century as a viable and energetic foundation.

Most of us assume DCF is a single source from which monies flow. Yet the process by which DCF awards its research funds is

quite complex. Grants and awards are carefully screened by the board of directors to ensure they adhere to DCF's objects and policies, as mandated by its charitable registration number. Charitable organizations are closely audited to ensure they respect such guidelines as the 80/20 rule, i.e., that 80 per cent of tax-receipted revenues are disbursed for the purposes of the charity, while only 20 per cent of these revenues are utilized for administrative purposes.

DCF was recently audited and received a very favourable final report. I feel this audit is reflective of the beginning of a new era for this worthy foundation. I would like to share with you the goals and vision of DCF for 2002:

- 4,000 dentists as active annual donors
- annual contributions of \$750,000
- 20 or more dental societies with endowment and developing funds
- DCF's financial assets at more than \$6 million
- an annual grants and awards budget of more than \$400,000
- a volunteer support team of more than 100 across the country.

DCF will need strong support from dentists to ensure these ambitious goals are met. It is hard to believe that with more than 16,000 dentists in Canada, only about 400 have currently recognized the importance of making an annual contribution to the DCF fund. This is an unfortunate fact. As one of the most affluent professions in the country, we have so far failed miserably to support DCF, a foundation that reflects our profession's generosity in helping others less fortunate than us. We can change this situation by making a commitment to support DCF and its laudable objects. In so doing, we will be building an organization that will make all of us in the profession proud.

As a step toward achieving that goal, I am pleased to announce the first annual CDA President's Golf Challenge. This year, the challenge will allow you to pit your golf skills against mine. At the beginning of the season, I will play an official round of golf, and after subtracting my handicap, will post a net golf score for you to challenge. For a small tax-deductible fee of \$25, you will be able to submit a signed and attested score card with your current handicap rating. Your net score will be used in the calculation. If you better my score by five strokes or less, you will receive a silver certificate, if you better it by six strokes or more, you will receive a gold certificate. There will be additional awards presented at the end of the season.

Start getting your game in shape. The challenge will be open to all practising Canadian dentists, and scores will be accepted for 1999 until the end of the year. You can play your round of golf at any of the DCF/Aurum Ceramic golf tournaments across the country, or at any golf course of your choice — except, of course, the mini-golf establishments. If you wish to participate but do not have a registered handicap, you will be given a nominal handicap of 25. The challenge will be conducted on the CDA honour system.

While a golf challenge will be fun for all who participate, our real purpose is to create for you, as a professional who has risen to the real challenge of providing health care, a level of comfort and knowledge that will allow you to include DCF in your annual list of charitable support. It has been said that small steps can lead to large rewards. My hope is that by participating in this event, you will move toward longstanding support for this worthy charitable foundation.

It is in that spirit that I look forward to your golf challenge.

*Richard D. Sandilands, DDS
President of the Canadian Dental Association*

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LETTERS



Editor's Comment

The Journal welcomes letters from readers about topics that are relevant to the dental profession. The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association. Letters should ideally be no longer than 300 words. If what you want to say can't fit into 300 words, please consider writing a piece for our "Debate" section.

Making a Living in Dentistry

My partner recently received a frantic call from a patient's mother. Apparently, her daughter had been to a downtown dental clinic where she was told that her amalgams were now old enough to be dangerous, and that unless they were removed, she had a good chance of getting cancer. My partner, not known for his diplomatic touch, blew his top and proceeded to revile the dentist who made the diagnosis.

I have to wonder if competition is that bad in downtown Toronto that dentists have to resort to these scare tactics to get business. It's bad enough that advertising has reached the level of snake-oil salesmanship. Dentists are actually doing infomercials, selling themselves as superior crème de la crème specialists in cosmetic dentistry. Yet we all know that you are only as good as your lab makes you look. The greatest impression, registrations, etc., can still end up looking like junk if your lab technician is having a bad day.

It scares me to think that we have new graduates looking at these goings-on and thinking that this is what you have to do to make a living in dentistry.

*Bernie Gryfe, DDS, B.Sc.
Etobicoke, Ont.*

French Translations

Congratulations on the quality of the work your translators have done in the French version of several of our articles.

*Peter E. Graham, Q.C.
Montreal, Que.*

Fee Guides

Dr. Joel Rosenbloom's letter on fee guides in the February 1999 issue of the *CDA Journal* rang a bell. I wrote a similar letter approximately ten years ago that resulted in a barrage of criticism from many dentists.

What caused me to write originally was a shocking experience I had at that time. My wife required a prophylaxis that was performed by the hygienist of an acquaintance. I was told that at \$60, I was receiving a professional discount. Let us assume that the average fee was \$75 (I understand it is \$100 nowadays); that means that a family of four would have been required to pay \$300 just to have their teeth cleaned. Are we not looking at a prohibitive situation for the bulk of our population?

Recently a D-O amalgam fractured in a lower bicuspid. When I went to have it replaced, I couldn't believe receiving a bill for \$65! I have to agree with Dr. Rosenbloom that dental services are no longer affordable for low- and even middle-income families. If the profession is looking for good PR, then keeping fees affordable as well as establishing clinics where low-income families can afford to be serviced is something

the leadership of the profession should make a priority.

*Isadore Wolch, DDS
Winnipeg, Man.*

Dental Care for Homebound and Geriatric Patients

Dr. Barrett's article, "The Looming Geriatric Dental Care Crisis" (*J Can Dent Assoc* 1998; 64:623-4), has, I'm sure, resulted in a flurry of supporting letters and telephone calls from colleagues across the country. I wish!

My program, Dental Care for the Homebound, began in 1989 ("Home Dental Care Programs," *J Can Dent Assoc* 1990; 56:837). It has been a very rewarding learning experience. Assembling an efficient, transportable kit of instruments, equipment and supplies, designing suitable charts and acceptable consent forms for a variety of facilities, and providing dental services to patients "where they are" has been an adventure in adaptability!

What I have found most disappointing has been my inability to interest colleagues in becoming involved. Professors tell me their students are not exposed to the dental requirements of the homebound because there is little evidence of need. Private practitioners seem too busy to get involved, yet assure me that "they would provide emergency services in hospital"!

In my 40 years of providing dental care, I have found my profession — for all its positive qualities — very unimaginative and seldom proactive when confronted by the unmet dental care needs of various segments of our society, especially the marginalized or most dependent.

When I started my practice in rural Saskatchewan in the late

Continued on page 223

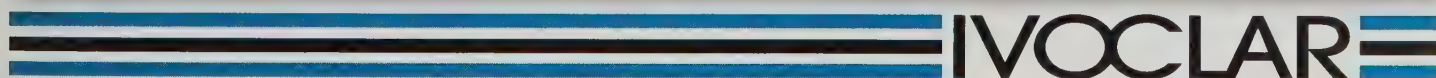
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NEWS UPDATE

CDA Workshops on Labour Mobility for General Dentistry

The Commission on Dental Accreditation of Canada is organizing a series of workshops on labour mobility for members of the dental health care delivery team. The workshops will focus on ways to voluntarily comply with provisions of the Agreement on Internal Trade (AIT). Under the AIT, signed by the federal government and its provincial and territorial counterparts in 1994, bodies regulating occupations and professions are required to assess their legislation and regulations to ensure they do not impose barriers to labour mobility.

"The Commission was asked to play a role in coordinating the discussions in all areas of dental health care," says Mr. Brian Henderson, CDA's associate executive director and director of the Commission. One of the by-products of the Commission's work in establishing national standards and assessing educational programs, he adds, is to facilitate the portability of qualified practitioners. "CDA encourages national mobility and inter-provincial cooperation, so naturally, we were pleased to work with the governments on this issue."

The first workshop was held in Toronto in January, and focused on general dentistry. It brought together the registrars of the dental regulatory authorities (DRAs) and various other observers. A draft consensus statement was prepared following the workshop proposing that, as of January 1, 2000, the National Dental Examining Board of Canada (NDEB) certificate "shall be a non-exemptible requirement for initial dental registration/licensure in Canada." If Canadian DRAs agree to this proposal, provincial registry/licensure will be based solely on possession of the NDEB certificate. Individuals licensed in Canada prior to this date who do not possess an NDEB certificate, but who have non-restricted registration/licensure

from any Canadian DRA, will be recognized as holding a qualification equivalent to the NDEB for the purposes of portability.

The workshop also dealt with the issue of "additional requirements" specified by DRAs for licensure or registration. These requirements would either have to be removed or shown to be equitably applied to every dentist in a jurisdiction.

"Of course, all these proposals depend on the DRAs voluntarily terminating alternative routes to registration, and verifying that any additional requirements for registration and licensure do not constitute barriers to portability," explains Mr. Henderson. "This is a complex issue. Regulatory bodies have been given an opportunity to make recommendations, but if progress cannot be made on a voluntary basis, both federal and provincial governments will pursue a regulatory approach to establishing portability."

The draft consensus statement was submitted to the DRAs for review. The Commission is planning follow-up workshops that will focus on drafting a formal statement of agreement for signature by DRAs across Canada. ■

CDAnet and Y2K Compliance

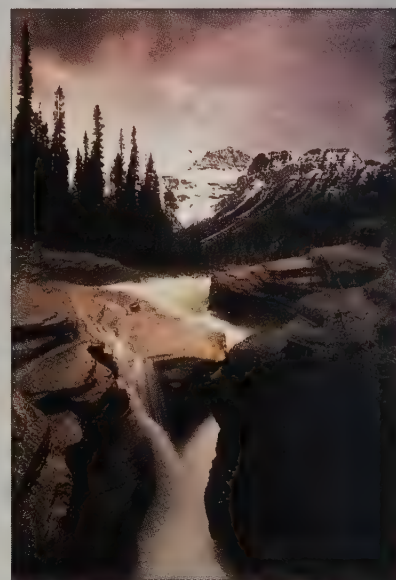
As the new millennium approaches, many dentists have expressed concerns about what might happen to CDAnet. Will you still be able to transmit your patients' dental claims electronically? CDA is strongly advocating on your behalf with all CDAnet participants, including software vendors, networks and insurance companies, asking that they conduct thorough testing of their systems to ensure any glitches will be corrected before January 1, 2000. Based on research conducted to date, we do not expect major interruptions in service as the CDAnet standards and the new CDA/QDSA communication software are Y2K compliant. As

Cover Photographer: Dr. Kelvin G. Kudryk

The photograph adorning this month's cover was taken by Dr. Kelvin Kudryk while on a trip with his dentist wife, Dr. Joanne Kudryk (shown in photo), celebrating their tenth wedding anniversary. The photo was taken off the Ice Fields Parkway (Banff-Jasper highway) in May 1997.

Dr. Kudryk finds that photography enables him to concentrate on a subject and "see" aspects of it that may have been missed with a more casual observation. The challenge for him lies in conveying emotions and meanings through images, and in reconciling that complex process with the seemingly easy action of taking a photograph.

Dr. Kudryk currently resides in Saskatoon, where he has been in private practice since 1997. He is a graduate from the University of Saskatchewan. ■



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well, most CDAnet-certified software vendors have informed us that they have upgraded their most current software product to Y2K compatibility. We are requesting more detailed information from all partners in CDAnet, and will publish the results in an upcoming issue. Until then, we recommend you contact your software and hardware supplier to check whether your particular office management system needs to be upgraded.

Please remember that if you must upgrade your business computer to meet Year 2000 requirements, you are eligible for a tax credit. The federal government announced that up to \$50,000 may be claimed as an accelerated capital cost allowance deduction, provided that the new system is purchased between January 1, 1998, and June 30, 1999. We encourage you to take advantage of this tax relief, and to upgrade to a CDAnet-certified software package. ■

APPOINTMENTS

Manitoba Dental Association Elects New President

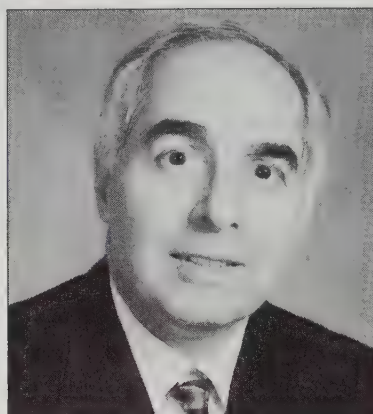


Dr. Phil Poon

Dr. Phil Poon was elected president of the Manitoba Dental Association (MDA) during the MDA's 115th annual meeting held in Winnipeg in January.

Dr. Poon is a 1980 graduate from the University of Manitoba's faculty of dentistry. He maintains a private practice in Winnipeg, and is a former president of the Winnipeg Dental Society. ■

Montreal Dentist Elected President of the CARDP



Dr. Robert David

Dr. Robert David was elected president of the Canadian Academy of Restorative Dentistry and Prosthodontics (CARDP) at the Academy's annual meeting held in Winnipeg, Manitoba. Dr. David has a private restorative practice in Montreal. He is also an associate professor in the faculty of dentistry at McGill University, his alma mater. ■

OBITUARY

Dentistry lost a man of integrity and great humour on February 25, when Dr. Kenneth F. Pownall, a former registrar of the Royal College of Dental Surgeons of Ontario (RCDSO), passed away.

After graduating from the University of Toronto's faculty of dentistry in 1951, Dr. Pownall began his career in Newfoundland's outports operating a mobile children's dental clinic for the Red Cross. In 1952, he returned to Ontario to set up private practice in Mimico (now part of Greater Toronto), where he was born in 1924.

The next decade was a busy one for Dr. Pownall as he became involved in organized dentistry. Shortly after returning to Ontario, he served on the Public Health Committee of the Ontario Dental Association (ODA). In 1953, he joined the part-time staff of the Toronto Hospital for Sick Children, performing work as a volunteer. He was also an active member of the West Toronto Dental

Society and the Academy of Dentistry of Toronto. And in 1962, he became a clinical demonstrator in the department of paedodontics at the University of Toronto.



Dr. Kenneth F. Pownall

With his extensive understanding of dentistry and dental hygiene, Dr. Pownall was a natural choice to become the RCDSO's new registrar in 1965. While at the helm of the regulatory body, he dealt with issues such as the community college system, which was set up in the mid-'70s to teach dental hygiene and dental technology; the movement to allow denturists to provide dentures directly to the public; and the plight of displaced immigrant dentists wanting to practise in Canada.

After his retirement in 1990, Dr. Pownall became chair of the ODA's Forensic Odontology Committee. Forensic dentistry had always been an area of special interest for Dr. Pownall, who was instrumental in forming the Canadian Society of Forensic Odontology in 1971.

Throughout his life, Dr. Pownall received many honours, including honorary life membership in the ODA and the Toronto Academy of Dentistry, an honorary fellowship in the Royal College of Dentists of Canada and a Distinguished Alumni Award from the University of Toronto. Dr. Pownall was also a fellow of the International College of Dentists, the American College of Dentists and the Academy of International Dental Studies. He received CDA's Distinguished Service Award in 1991. ■

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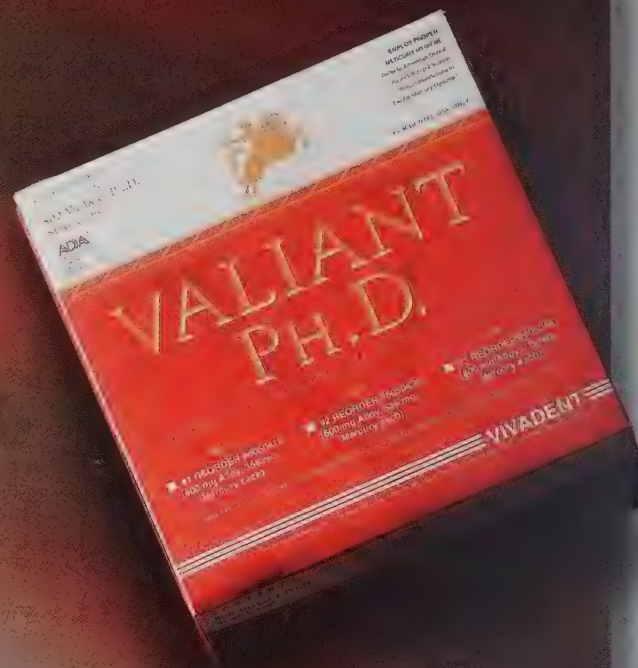
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Clinical Trial of Three 10% Carbamide Peroxide Bleaching Products

Laura Tam, DDS, M.Sc.

ABSTRACT

Background

A profusion of commercial bleaching systems exists on the market today, but there are few clinical comparisons of these systems.

Methods

In this study, three different commercial 10% carbamide peroxide bleaching systems were used by 24 patients in an overnight protocol for two weeks. Each patient used two of the bleaching products simultaneously in a side-by-side comparison.

Results

The mean onset of tooth whitening was 2.4 ± 1.7 days. Tooth sensitivity was the most frequent side effect, as 64% of the patients reported tooth sensitivity occurring after 4.8 ± 4.1 days and lasting for 5.0 ± 3.8 days. Although inpatient differences were recorded for the three commercial 10% carbamide peroxide bleaching systems by the patients, there were no statistical differences in the time of onset of subjective tooth whitening and the onset, frequency and duration of tooth sensitivity among the three commercial bleaching systems when compared pairwise or independently ($p < 0.05$).

Conclusion

Selection of which bleaching product to use should be based on the concentration of the active ingredient, the viscosity of the product and other marketing features. Further research is needed to investigate the causes of tooth sensitivity and methods to reduce its severity and frequency.

MeSH Key Words: dental devices, home care; peroxides/therapeutic use; tooth bleaching/methods.

© J Can Dent Assoc 1999; 65:201-5
This article has been peer reviewed.

Introduction

Patients today have many options to achieve a more ideal tooth colour or appearance, including bleaching, veneers and crowns. Tooth bleaching is a relatively simple and conservative option. The most popular method of tooth bleaching is the home bleaching system wherein the patient wears a custom-made

bleaching tray containing carbamide peroxide overnight.¹⁻⁴

A profusion of commercial bleaching systems exists on the market today. Home bleaching systems commonly utilize carbamide peroxide to deliver a more stable form of hydrogen peroxide, the active bleaching agent. Most home bleaching systems contain 10% carbamide peroxide, but dif-

ferent commercial brands claim superiority based on differences in the carrier of the active ingredient, which could affect material delivery, material retention in the bleaching tray (material viscosity) or patient compliance (tooth sensitivity, material taste). Although there are a few reports that compare the different bleaching systems by listing their material and

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The protocol for this study was approved by the University of Toronto Office of Research Services Human Subjects Review Committee.

Results

Fifteen women and nine men participated. Their mean age was 28.5 years (range 17 to 51). They did not exhibit tooth sensitivity or recession in the subject teeth before the bleaching treatment. The patients bleached their teeth for 13.5 ± 2.9 nights. Three-quarters of the patients (18 of 24) complied with the daily regimen. The other patients skipped a day or more during the treatment for sensitivity reasons. The recorded time of onset of subjective tooth whitening and the onset, frequency and duration of tooth sensitivity are listed in **Table I**.

Side effects of the bleaching treatment presented minimal problems to the patients. Six patients (25%) reported gum tingling, tenderness or mild sensitivity for one or two days. One patient reported a scratchy throat for one day. One patient reported sleep interruption and a sore jaw for a couple of days toward the end of treatment. Another patient reported some bruxism as a response to wearing the tray. Three patients did not like the consistency of one of the bleaching products compared with the other.

Inpatient differences in whitening effect and tooth sensitivity by the two commercial bleaching systems used by each patient were occasionally reported; however, there was no clear trend for the inpatient differences for the bleaching agents. No inpatient differences in tooth whitening were noted between the left and right halves. There were no statistical differences in the time of onset of subjective tooth whitening and the onset, frequency and duration of tooth sensitivity among the three commercial bleaching systems when compared pairwise (paired *t*-test) or independently (ANOVA).

Table I

Time of Onset of Subjective Tooth Whitening and Time of Onset, Frequency and Duration of Tooth Sensitivity as Reported by Patients After Bleaching Treatment

Product	Number of patients	Onset of whitening (days)	Frequency of sensitivity (%)	Onset of sensitivity (days)	Duration of sensitivity (days)
Platinum	17 halves	2.6 ± 1.6	65	6.2 ± 4.8	4.4 ± 3.4
Opalescence	15 halves	2.1 ± 1.4	60	4.0 ± 3.7	6.2 ± 4.9
Nite White	16 halves	2.4 ± 2.0	62	3.9 ± 3.6	4.5 ± 3.0
Totals	24	2.4 ± 1.7	64	4.8 ± 4.1	5.0 ± 3.8

Discussion

A placebo gel was not included in this study because it is well known that carbamide peroxide and hydrogen peroxide bleaching materials will lighten teeth significantly more than placebo materials.⁷⁻¹¹ The patients were aware which bleaching agents they were using. It was thought that potential bias by the patients toward a particular agent would be minimal given that the agents had the same 10% carbamide peroxide concentration, the patients had no previous bleaching experience or affiliations with any of the agents, and no marketing or extraneous packaging materials were given to the patients.

No attempt was made to quantify the degree of whitening achieved. Other studies have attempted to quantify tooth colour changes by using the Vita shade tab system or a colorimeter.⁷⁻¹¹ The Vita shade tab system requires subjective shade matching, and the colorimeter has been criticized because of its technique sensitivity and need for a flat surface. In addition, small increments of change that could perhaps be measured by instruments such as a colorimeter would not necessarily indicate a clinically significant result. A clinically significant bleaching result necessitates a clear perception by the patient of a difference in tooth colour. In this study, therefore, a notation by the patient that the teeth became whiter was accepted as a clinically significant colour change.

Every patient reported some degree of tooth whitening. The colour changes ranged widely from very slight to dramatic. The average onset for apparent tooth colour change was 2.5 days. An early onset of bleaching effect is desirable to encourage compliance. Four patients reported the onset of tooth whitening as occurring in localized areas of their teeth, resulting in white spots. This response to bleaching has been attributed to variations in enamel structure.¹² The visibility of the white spots diminishes over time as the dentin and the rest of the enamel become whiter and perhaps as some of the early enamel whitening regresses. Patients should be advised of the likelihood of initial white spots as a result of the bleaching treatment.

The advantages of overnight wear include greater patient convenience and improved material retention due to less salivation and less interference with the bleaching tray by the patient. Disadvantages are that overnight wear generally leads to longer contact times and does not allow the patient to monitor the side effects, such as tooth sensitivity.

Tooth sensitivity was the most significant side effect of this study. Its frequency was relatively high compared to other reported problems. Other clinical studies using 10% carbamide peroxide for overnight wear over a period of several weeks have reported a 9% to 100% incidence of tooth sensitivity.^{7,13-16} Leonard and col-

leagues¹⁷ suggested that the only predictors for tooth sensitivity during home bleaching were frequency of application and whether the patient had sensitive teeth before bleaching. Sex, age, day or night wear pattern, dental arch, and absence or presence of abrasion, defective restorations or gingival recession had no significant effect on the development of tooth sensitivity in their study.

In the present study, most reports of sensitivity were mild, transient, sporadic or continuous over a few days, and were elicited by a cold stimulus. When specific teeth were indicated, they were usually the incisors and canines; the premolars were never indicated as specifically sensitive. Two patients reported episodes of spontaneous sensitivity. Two patients reported sensitivity to heat. Five patients reported one to three days of "acute," "very," "extreme," "high" or "severe" tooth sensitivity. The mean number of days of sensitivity was 5.0 ± 3.8 days. All patients should be advised of the likelihood of tooth sensitivity as part of their informed consent. They should also be told that sensitivity could be severe enough to prevent or at least delay the completion of treatment. In other studies, 2 of 17, 4 of 10 and 4 of 28 patients discontinued their bleaching treatment as a result of tooth sensitivity.^{7,18} In the present study, 25% of the patients skipped at least one day of bleaching for tooth sensitivity reasons but continued to bleach their teeth thereafter. One patient stopped treatment after 12 days because of sensitivity.

The patients were generally assessed within one week of the bleaching treatment. No patients reported the persistence of tooth sensitivity after the cessation of bleaching. This is in agreement with other reports, which conclude that no long-term irreversible pulpal effects are associated with these bleaching techniques.⁶ Electric pulp tests have indicated no significant changes in pulp response following bleaching whether the teeth were sensitive or not.^{7,16} Longer exposures to

bleaching agents do not appear to increase the level of tooth sensitivity. In this study, tooth sensitivity often diminished during the latter part of treatment. In one 6-month clinical study, the majority of tooth-sensitive days occurred near the beginning of treatment and there were only zero to 20 days of total tooth sensitivity.¹⁸

Tooth sensitivity has been attributed to the permeation of the bleaching agent into the pulp.¹⁹ Fluoride gels in the bleaching trays have been recommended for treating tooth sensitivity;³ however, fluoride's action in desensitization is unknown. It could be beneficial in reducing exposure of the pulp to the bleaching agents by simply supplanting the use of the bleaching agent for that day. Fluoride and other desensitizing pastes could also theoretically reduce the penetration of hydrogen peroxide into the pulp by reducing the permeability of dentinal tubules at their orifices. Nonetheless, the best ways to reduce the pulpal inflammation causing tooth sensitivity are probably to reduce the time of exposure to the bleaching agent and to administer anti-inflammatory analgesics.

Despite some reported inpatient differences, there were no statistically significant differences among the three commercial bleaching systems with respect to tooth sensitivity.

According to information from the manufacturers, Opalescence uses glycerine and contains 20% water. Platinum has a water-based dentifrice formulation. Nite White Excel uses a polyglycol composition and is unique because it contains no water. The water content of the bleaching agent could conceivably affect both tooth dehydration and material stability. In the present study, the different water content of the three commercial bleaching systems did not appear to affect tooth sensitivity or tooth whitening.

The pH values of the three bleaching materials were measured at room temperature by a flat surface polymer body combination electrode with an Accumet

620 pH/mV meter (Fisher). For Platinum, the mean pH was 5.90 (± 0.03 , standard deviation); for Opalescence, 6.40 (± 0.09); and for Nite White, 7.43 (± 0.03). Scanning electron microscope investigations have shown slight changes to enamel surface morphology after exposure to bleaching material, particularly under more acidic conditions.²⁰ The clinical significance of these changes, however, is considered negligible or minimal for bleaching treatments of normal duration when the buffering and remineralization potential of the saliva are considered.²¹ Furthermore, it has been shown that the pH of a carbamide peroxide solution increases during nightguard wear as a result of urea breakdown.²² The pH of the material can affect peroxide radical liberation (and hence, bleaching effect) and material stability.²³ A sufficiently low-pH material can also open exposed dentinal tubules, resulting in increased tooth sensitivity. In the present study, the different pH values of the three commercial bleaching systems did not result in clinical differences in tooth sensitivity or tooth whitening.

The selection of a bleaching product should be based on the concentration of the active ingredient, the viscosity of the bleaching agent (higher material viscosity leads to greater material retention)²⁴ and other marketing features. It is likely that higher concentrations of carbamide peroxide will not only whiten teeth more quickly and to a greater degree, but will also lead to increased sensitivity problems. Therefore, a balance between tooth sensitivity and tooth whitening needs to be struck for each individual patient. In Canada, a concentration of 10% carbamide peroxide is significant because formulations containing greater than 10% can be used only under the supervision of dental professionals. In the United States, only 10% carbamide peroxide formulations have received the American Dental Association Seal of Acceptance from the Council on

Scientific Affairs of the American Dental Association.

Bleaching methods and materials appear to be growing by leaps and bounds. This study attempts to provide some independent clinical data for dental practitioners for the most common home bleaching method using an overnight wearing regimen in a clinical setting. Further research is needed to investigate the causes of tooth sensitivity and methods to reduce its severity and frequency. ■

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CDA RESOURCE CENTRE

For more information on tooth bleaching techniques, products and other related issues, contact the CDA Resource Centre. The Resource Centre has information packages and textbooks on tooth bleaching. It can also do computer searches for CDA members.

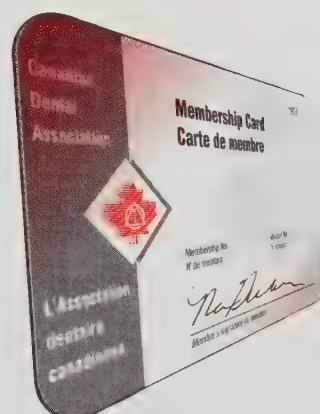
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Antibiotic

Action - Clindamycin exerts its antibacterial effect by causing cessation of protein synthesis and also causing a reduction in the rate of synthesis of nucleic acids.

INDICATIONS - Dalacin® C (clindamycin hydrochloride) is indicated in the treatment of serious infections due to sensitive anaerobic bacteria, such as bacteroides species, peptostreptococcus, anaerobic streptococci, clostridium species and microaerophilic streptococci.

Dalacin® C is also indicated in serious infections due to sensitive gram-positive organisms (staphylococci, including penicillinase-producing staphylococci, streptococci and pneumococci) when the patient is intolerant of, or the organism resistant to other appropriate antibiotics.

Dalacin® C is indicated for the treatment of the *Pneumocystis carinii* pneumonia in patients with AIDS. Clindamycin in combination with primaquine may be used in patients who are intolerant to, or fail to respond to conventional therapy.

Dalacin® C is indicated for prophylaxis against alpha-hemolytic (viridans group) Streptococci before dental, oral and upper respiratory tract surgery.

- a) The prophylaxis of bacterial endocarditis in patients allergic to penicillin with any of the following conditions: congenital cardiac malformations, rheumatic and other acquired valvular dysfunction, prosthetic heart valves, previous history of bacterial endocarditis, hypertrophic cardiomyopathy, surgically constructed systemic-pulmonary shunts, mitral valve prolapse with valvular regurgitation or mitral valve prolapse without regurgitation but associated with thickening and/or redundancy of the valve leaflets.
- b) Patients taking oral penicillin for prevention or recurrence of rheumatic fever should be given another agent such as clindamycin, for prevention of bacterial endocarditis.

CONTRAINDICATIONS - As with all drugs, the use of Dalacin® C (clindamycin hydrochloride) is contraindicated in patients previously found to be hypersensitive to this compound. Although cross-sensitization with Lincocin® (lincomycin hydrochloride) has not been demonstrated, it is recommended that Dalacin® C not be used in patients who have demonstrated lincomycin sensitivity.

Until further clinical experience is obtained Dalacin® C is not indicated in the newborn (infants below 30 days of age), or in pregnant women.

WARNINGS - Some cases of severe and persistent diarrhea have been reported during or after therapy with Dalacin® C (clindamycin hydrochloride). This diarrhea has been occasionally associated with blood and mucus in the stools and has at times resulted in acute colitis. When endoscopy has been performed, some of these cases have shown pseudomembrane formation.

If significant diarrhea occurs during therapy, this drug should be discontinued or, if necessary, continued only with close observation. Significant diarrhea occurring up to several weeks post-therapy should be managed as if antibiotic-associated.

If colitis is suspected, endoscopy is recommended. Mild cases showing minimal mucosal changes may respond to simple drug discontinuance. Moderate to severe cases, including those showing ulceration or pseudo membrane formation should be managed with fluid, electrolyte, and protein supplementation as indicated. Corticoid retention enemas and systemic corticoids may be of help in persistent cases, anticholinergic and antiperistaltic agents may worsen the condition. Other causes of colitis should be considered.

Studies indicate a toxin(s) produced by Clostridia (especially Clostridium difficile) may be a principal cause of clindamycin and other antibiotic-associated colitis. These studies also indicate that this toxigenic Clostridium is usually sensitive in vitro to vancomycin. When 125 mg to 500 mg of vancomycin were administered orally four times a day for 5 - 10 or more days, there was a rapid observed disappearance of the toxin from fecal samples and a coincidental recovery from the diarrhea.

It should be noted that serious relapses have occurred up to one month after apparently successful treatment. A relatively prolonged period of continuing observation is therefore recommended.

In patients with G-6-PD deficiency, the combination of clindamycin with primaquine may cause hemolytic reactions; reference should also be made to the primaquine product monograph for other possible risk groups for other hematologic reactions.

PRECAUTIONS - Dalacin® C (clindamycin hydrochloride) like any drug, should be prescribed with caution in atopic individuals.

The use of antibiotics occasionally results in overgrowth of non-susceptible organisms particularly yeasts. Should super-infections occur, appropriate measures should be taken as dictated by the clinical situation.

As with all antibiotics, perform culture and sensitivity studies in conjunction with drug therapy.

Since abnormalities of liver function tests have been noted occasionally in animals and man, periodic liver function tests should be performed during prolonged therapy. Blood counts should also be monitored during extended therapy.

Routine blood examinations should be done during therapy with primaquine to monitor potential hematologic toxicities.

Dalacin® C may be used in anuric patients. Since the serum half-life of clindamycin in patients with impaired hepatic function is greater than that found in normal patients, the dose of Dalacin® C should be appropriately decreased. Hemodialysis and peritoneal dialysis are not effective means of removing the compound from the blood. Periodic serum levels should be determined in patients with severe hepatic and renal insufficiency.

ADVERSE REACTIONS - Only 65 of the 851 patients treated for infections developed side effects representing 7.6% of the total study group or 8.0% of the 813 patients with follow-up. Only 22 of these patients' symptoms were considered due to Dalacin® C (clindamycin hydrochloride) for an incidence of 2.7% among the 813 cases with follow-up.

Gastrointestinal - Abdominal pain occurred in 12 patients for an overall incidence of 1.4% in 851 patients and was considered drug related in 7 (0.8%).

Diarrhea occurred in 22 cases for an overall incidence of 2.6% and was drug related in 13 (1.5%). Vomiting occurred in 14 cases with an overall incidence of 1.6%. Seven patients (0.8%) had nausea which was drug related in 2 cases (0.2%). Side effects were severe in 10 instances. (See also under "WARNINGS"). Esophagitis, at times severe, has been reported.

Hemopoietic - Transient neutropenia (leukopenia) has been reported. Its relationship to therapy is unknown. No irreversible hematologic toxicity has been reported. However, in clindamycin/primaquine combination studies, serious hematologic toxicities (grade III, grade IV neutropenia or anemia, platelet counts < 50 X 10⁹/L, or methemoglobin levels of 15% or greater) have been observed.

Skin and Mucous Membranes - Skin rashes have been reported in 6 patients (0.7%), none of which could be determined as drug related. One case of urticaria was reported but its relationship to drug therapy could not be determined.

Liver - Although no direct relationship of Dalacin® C to liver dysfunction has been noted, transient abnormalities in liver function tests (elevations of alkaline phosphatase and serum transaminase) have been observed in a few instances.

SYMPTOMS AND TREATMENT OF OVERDOSAGE - No cases of overdosage have been reported. It would be expected however, that should overdosage occur, gastrointestinal side effects including abdominal pain, nausea, vomiting and diarrhea might be seen. During clinical trials one 3-year old child was given 100 mg/kg of Dalacin® C (clindamycin hydrochloride) for five days and showed mild abdominal pain and diarrhea. One 13-year old patient was given 75 mg/kg for five days with no side effects. In both cases laboratory values remained normal.

Overdosage should be treated with simple gastric lavage. No specific antidote is known.

DOSAGE AND ADMINISTRATION

Adults: 150 mg every 6 hours.

Moderately severe infections: 300 mg every 6 hours.

Severe infections: 450 mg every 6 hours.

Children (over one month of age):

One of the following two dosage ranges should be selected depending on the severity of the infection:

1. 8-16 mg/kg/day (4-8 mg /lb/day) divided into 3 or 4 equal doses.

2. 16-20 mg/kg/day (8-10 mg/lb/day) divided into 3 or 4 equal doses.

Pneumocystis carinii pneumonia in patients with AIDS:

Dalacin C (clindamycin hydrochloride) 300-450 mg may be given orally every 6 hours in combination with 15-30 mg of primaquine for 21 days. Alternatively, DALACIN C PHOSPHATE (clindamycin phosphate) 600-900 mg (IV) may be given every 6 hours or 900 mg (IV) every 8 hours in combination with oral daily dose of 15-30 mg of primaquine. If patients should develop serious hematologic adverse effects, reducing the dosage regimen of primaquine and/or DALACIN C capsule should be considered.

Absorption of Dalacin® C (clindamycin hydrochloride) is not appreciably modified by ingestion of food and may be taken with meals.

To avoid the possibility of esophageal irritation, Dalacin® C capsules should be taken with a full glass of water.

For prevention of endocarditis: Adults: 300 mg orally 1 hour before procedure; then 150 mg 6 hours after initial dose. Children: 10 mg/kg (not to exceed adult dose) orally 1 hour before procedure; then 5 mg/kg 6 hours after initial dose.

Note: With b-hemolytic streptococcal infections, treatment should continue for at least 10 days to diminish the likelihood of subsequent rheumatic fever or glomerulonephritis.

AVAILABILITY OF DOSAGE FORMS

Each capsule contains clindamycin hydrochloride hydrate equivalent to 150 mg or 300 mg clindamycin base. Supplied in bottles of 100 and 500 capsules.

Product monograph available upon request.



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established independent dental corporate body — the College of Dental Surgeons of the Province of Ontario. This legal professional entity had an elected board of directors, was responsible for the licensure and regulation of dental practice, adopted an enforceable code of ethics, and established a dental school with strict educational standards and guidelines.

The Ontario Dental Act still ranks as the first, most comprehensive dental legislation ever drafted. It has been copied or used as a model by every state and country in the world. The act may also have been one of the main reasons why Painless Parker and his ilk had to leave Canada and indulge in their sometimes questionable activities elsewhere as it contained strict rules regarding professional conduct and advertising.

Had it not been for a series of historic occurrences and mishaps, it is conceivable that professional dental corporate independence could have emerged in Lower Canada (Quebec) in 1840 — the same year that marked the founding of the American Society of Dental Surgeons and the Baltimore College of Dentistry under the guidance and leadership of Drs. Horace Hayden and Chapin Harris. An attempt was made by Dr. Aldis Bernard, a Montreal dentist who later served as mayor of the city, to insert clauses for the regulation of dentistry into a bill before the legislature. However, this legislative draft was initially sidetracked because of English-French conflicts and civil disturbances, and subsequently lost in a courthouse fire. A new draft was reintroduced in the legislature in 1869, when the College of Dental Surgeons of the Province of Quebec was established.

Professional and Governmental Interrelationships

In Canada, a spirit of cooperation and trust existed between the dental profession and government from the earliest inception of organized dentistry. There was in this country an immediate and legal distinction of a profession from a vocation, a craft or a busi-

ness. Not so in the U.S., where governments — when involved at all — were concerned with establishing anti-monopoly regulations, and where organized dentistry, in an adversarial position, sought to defend its entrepreneurial independence and ward off government interference.

In terms of educational standards, admission requirements to dental schools and ethical guidelines, Canada served as a role model, with its practices emulated on numerous occasions. Canada had no proprietary schools of dentistry, so it never had to deal with tensions between dental schools, organized dentistry and the government, as occurred in the U.S. Both the Flexner and Gies reports on the American medical and dental professions respectively held up their Canadian counterparts as models of academic and scientific excellence, emphasizing that university and hospital affiliations did not diminish technical excellence, which tended to dominate the American dental curriculum. The Gies report stated: "In recent years, there has been more respect for the medical science and less waste of time or excesses of elementary dental technology in Canadian schools. As a consequence, the average graduate from Canadian schools has a better comprehension of dentistry as a health service, than many of his American colleagues." The report went on to note: "There is no evidence that having been taught the mechanical principles, he (the Canadian student) does not readily and rapidly acquire all the requisite manual dexterity or that he is less competent than his American confreres to profit from developments in their clinical application."

By 1912, preceptor training had come to an end in Canada, and graduates of American proprietary schools were being refused certification. Only chartered universities could issue doctorates. McGill University would award degrees as a Licentiate of Dental Science (LDS), Doctor of Dental Science (DDS) or Graduate of Dental Surgery (GDS) until 1920,

when it first issued a true DDS, or Doctor of Dental Surgery. Its admission requirements to dental school were a bachelor's degree of arts or sciences, followed by a four-year dental curriculum.

Professional Organizations in Canada

Regional and provincial dental associations have existed in Canada since the 1860s, and were often loosely affiliated with similar organizations in neighbouring American cities or states. However, the first and only Canadian national organization was and remains the Canadian Dental Association (CDA). The first meeting of CDA took place in 1902 in Montreal and was attended by 334 dentists representing some 1,500 practitioners from every province and territory. This historic gathering of Canada's dental profession established three pivotal foundations:

1. a Dominion Dental Council with Canada-wide powers of certification and reciprocity;
2. a Canadian Dental Corps to service Canadian military personnel serving with the British Imperial Forces during the Boer War in South Africa; and
3. a Code of Ethics, which was enforced even in the U.S., where American dentists in border towns were denied the right to advertise in Canada if such ads conflicted with the code.

In 1906, at CDA's third biennial meeting, concerns dealing with dental public health emerged, giving rise to proposals that were instituted almost immediately, including free examinations of school-children, the revision of school books to include dental hygiene, and the distribution of dental educational materials and pamphlets to schoolteachers. These proposals established early the principle that dental health was a right, not a privilege.

Social Legislation in Canada

Canadian dentists have always felt a strong sense of social obligation. Before the formation of CDA, the Halifax Visiting Dispensary

Society opened in Nova Scotia, in 1855, offering free dental services to the underprivileged. In 1874, in Toronto, Ontario, Dr. J.G.C. Adams — who has earned the title of “Father of Public Health Dentistry” — opened the Toronto Dental Educational Institute, where emphasis was placed on preventive treatment as an alternative to artificial dentures, which were then in vogue. By 1919, the Canadian Red Cross had established caravans, followed in 1924 by travelling clinics that visited rural areas and offered dental services to children who either could not afford dental care or did not have easy access to dentists. At a historic joint meeting of CDA, the British Dental Association and the Ontario Dental Association in Toronto in 1932, CDA introduced initial plans for state dentistry (followed in 1938 by a “children’s plan”). Newspapers reporting on the meeting praised dental authorities for making Canada a leader in promulgating dental hygiene. In 1942, with the cooperation of CDA, the Canadian government introduced health legislation, which was sidetracked by a wartime “baby bonus.” It was not until the ’50s and ’60s that publicly funded medical and dental care began to have an impact on the Canadian public. Today, our “Canadian system” is highly regarded, especially by our neighbours to the south, as a model for public health services.

Research

While government funding, an entrepreneurial spirit, and the search for excellence have propelled the U.S. to the forefront of dental research, Canada has also had its share of major contributions in the clinical and technical fields. Canadian dentists, for example, have played a major role in the development of portable and mobile dental equipment, partly in response to the need for providing dental services to the scattered, far-flung native populations in the North, and partly as a result of pioneering efforts in military dentistry.

The development and introduction of the first carbide bur for high-speed handpieces was also the result of a series of Canadian initiatives. George Beavers, a Canadian manufacturer of toothbrushes, was asked by the federal government to supply the Canadian Dental Corps with dental burs after the world’s major suppliers in England and Germany became cut off from North America following the outbreak of World War II. When the war ended, representatives of Beavers Bur Company were sent to Germany to study German technology. While there, they met Rudolph Funke, who had developed the process of hardening steel with tungsten carbide in 1917, a technique that was not widely applied to dental burs because of the slow speed of handpieces. Funke was brought to Canada where he and Beavers collaborated in the development of the first carbide burs that saw wide application.

Dentistry in the Armed Forces

Canada’s role as a true world leader and pioneer in providing dental services to its armed forces is almost unknown. The world’s best kept military secret is probably the fact that, at the initiative of the newly formed CDA, the world’s first Dental Corps, staffed by commissioned dental officers, was sent off to care for the dental health needs of Canadian volunteer units fighting with Britain’s Imperial Army in South Africa during the Boer War of 1899-1902. The CDA also insisted, when hostilities broke out at the beginning of World War I in 1914, on the formation of a tri-service Canadian Dental Corps whose prime responsibility would be to render to all Canadian soldiers, whether in base camps or forward units, the best dental care and maxillofacial surgery available. The determination to render all military personnel dentally fit before being sent overseas, along with the development of mobile equipment and forward mobile units and maxillofacial field hospitals, made the Canadian soldier the envy of both allied and enemy nations.

Although the Dental Corps was demobilized after World War I, CDA and the military developed a plan so that at the outbreak of World War II in 1939, the Corps could be put in the field quickly. In this conflict, the heroic service of the Dental Corps resulted in casualties of 14 officers and 19 other ranks killed in action. The Corps was awarded the warrant of “Royal” by the then monarch King George VI. To this day, the Canadian Forces Dental Services — as the Corps is now known — continue to serve with distinction alongside Canada’s volunteer army, and in most instances, provide dental care to the United Nations peacekeepers around the world.

As the new millennium approaches, and along with it, the celebration of CDA’s centennial in 2002, the profession of dentistry in Canada can look back with pride on its numerous accomplishments, knowing it is recognized worldwide and honoured and trusted by the population it serves. Even as dental education in Canada undergoes review, there is no doubt that the dentists of tomorrow will continue to have, as the Gies report pointed out as far back as 1926, “a better comprehension of dentistry as a health service”. The evolution of dentistry in this country will continue in the direction pioneered by CDA in 1902, remaining true to the principle that dental health care is not a privilege but a right. It is dentistry’s obligation and responsibility to ensure that right is enjoyed by those it serves. ■

Dr. Lang is a retired dentist from Mount-Royal, Quebec. He teaches a course on the history of dentistry at McGill University’s faculty of dentistry.

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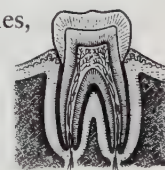
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Fig. 1: Saddle nose deformity, front and side views.

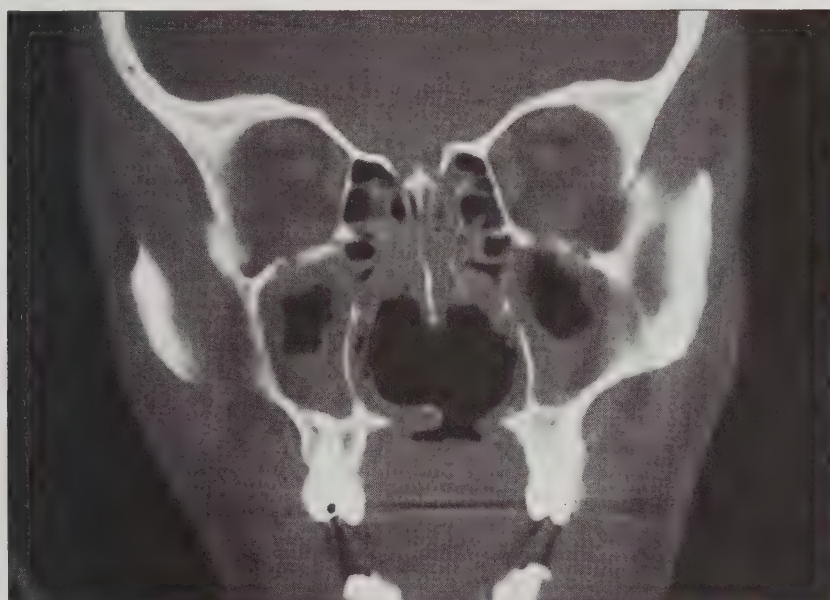


Fig. 2a: CT scan showing palatal perforation, loss of nasal septum and turbinates, and thickening of the maxillary sinus membranes.

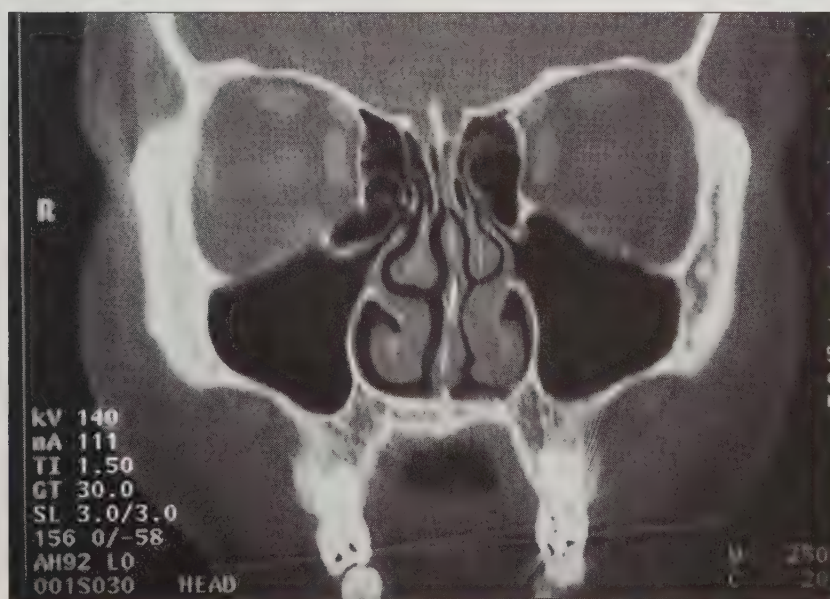


Fig. 2b: CT scan of normal midfacial anatomy.

the patient's nasopalatal defect, while **Fig. 2b** shows a CT scan of a normal midfacial anatomy.

The biopsy of soft tissue, taken from the palatal margin of the oral-nasal opening, revealed a non-specific ulcer and chronic inflammation with some eosinophils. The presence of eosinophils has been noted in pathologists' findings, as reported in Armstrong and Shikani¹⁰ and Schweitzer.¹³

Management was predicated on complete cessation of the drug. The patient was informed of the consequences of continued cocaine use, and how to get help in quitting. He was also advised to smoke less, and to use a proper filtration mask while at work. Appropriate management of recurrent sinus infections was coordinated with his family physician. After basic oral hygiene and restorative procedures were provided, a removable obturator was constructed (**Fig. 3a, 3b** and **3c**). The patient will be re-evaluated for possible surgical closure of the oral-nasal fistula at a later date.

Pharmacology

Cocaine is a naturally occurring alkaloid. It is extracted from the leaves of the *Erythroxylon coca* plant, which is indigenous to three countries in northern South America.⁴ Cocaine is a psychologically disruptive and dependence-inducing drug; classified as a psychostimulant, it exhibits both local anesthetic and neurotransmitter effects.^{5,11,13} Like lidocaine, it functions as a local anesthetic by blocking the sodium channels of neural tissues, and like lidocaine, can trigger seizures at higher doses.¹⁴ Its neurotransmitter effects are attributed to a blocking action on the reuptake of specific transmitter agents by the presynaptic nerve endings. The resultant excess of neurotransmitter causes increased stimulation of the postsynaptic nerves. Dopamine activity is enhanced in the brain, causing a feeling of euphoria.¹⁵ Peripherally, norepinephrine is the transmitter whose activity is increased.¹¹ This profound enhancement of sympathetic tone is responsible for the vasoconstrictive, tachycardiac, and



Fig. 3a: Nasopalatal defect.



Fig. 3b: Obturator removed.

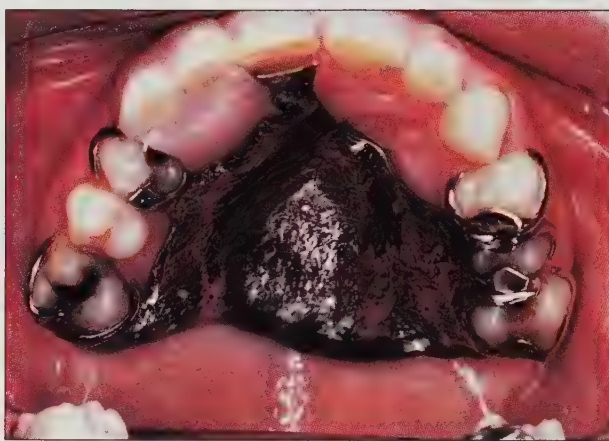


Fig. 3c: Obturator inserted.

dysrhythmic actions of the drug.^{6,8,14,16,17}

Cocaine also affects pulmonary physiology. By acting at the level of the medulla, an increase of the respiratory rate is produced.⁴ It has been postulated that vasoconstriction of the pulmonary circulation reduces blood flow sufficient to induce hypoxia.⁴ This is significant when one considers that the cardiovascular effects of cocaine profoundly increase myocardial oxygen demand while simultaneously vasoconstricting the coronary arteries.⁵ The potential then exists for myocardial infarction, pulmonary edema, circulatory collapse, and death.^{6,16}

Cocaine is well absorbed from mucous membranes and the gastrointestinal mucosa. It is rapidly degraded by hepatic and plasma esterases to water soluble metabolites that are excreted in the urine.^{5,16} Peak blood levels occur within 30 minutes, with most of the drug gone within two hours.¹⁸ While trace amounts of cocaine may be found in the bloodstream

for eight to 12 hours after drug use, metabolites may be present for ten days.⁵

Cocaine is commonly taken intravenously, by smoking or inhalation of the "crack" or "free-base" form, or by snorting.^{5,8,13} Although less common, cocaine can also be topically applied to gingival tissues, or ingested orally (mixed with cocktails).^{13,19,20} Cocaine has an acidic pH of 4.0; its purity and sterility, and the type of adulterants it is mixed with, all directly affect its potential for local and systemic complications.^{17,21,22} HIV, hepatitis, and endocarditis are more prevalent in the population of intravenous drug abusers.^{3,5,7,13,16}

Clinical Findings of Cocaine Abuse

The street form of cocaine is both vasoconstricting and locally irritating to the thin respiratory epithelium of the nasal airway. Repeated snorting sets up a cascade of ischemia, inflammation, micronecrosis, infection, and then macronecrosis leading to perfora-

tion.^{11,23} Nasal septum perforations of both the cartilaginous and bony tissues have been well documented.^{3,24} With larger defects, support of the nose is compromised, resulting in the typical saddle nose deformity.^{3,24} Some patients have been known to use various narrow instruments to debride intranasal crusting, increasing the potential for perforations.¹¹ In extreme cases, adjacent bony structures may become eroded and vital tissues damaged.^{6,12,13,22,23}

Similarly, topically applied cocaine can be locally destructive to the oral mucosa and dentition. Acute ulceration, necrosis, and rapid recession of gingival tissues, as well as erosion of both dentin and enamel, have been reported.^{19,20} Inhalation of "crack" cocaine has been implicated in the corrosion of gold dental restorations.²⁵ Moreover, cocaine consumption immediately before or after tooth extraction can result in excessive hemorrhage.²⁶

Several publications list other oral findings that are indirectly associated with cocaine abuse.^{4,7,20,25} Patients with a substance abuse problem will frequently display higher rates of decay and periodontal disease as a result of general neglect.^{4,7,25} Chronic cocaine users often develop bruxing habits and demonstrate patterns of severe occlusal wear.^{4,7,20} Aggressive tooth brushing while on a "cocaine high" has been implicated as the cause of both cervical tooth abrasion and gingival lacerations.^{4,7} Xerostomia and oral

Table I

Orofacial Signs and Symptoms of Chronic Cocaine Abuse

Snorting	Gingival application
• loss of nasal hairs • nasal crusting • sinusitis/halitosis • epistaxis • nasal septal defect • saddlenose deformity • palatal perforation • erosion of turbinates, ethmoids, medial sinus walls, cribriform plate, and orbital walls • loss of smell • loss of visual acuity/diplopia • CSF leak	• mucosal ulceration • necrotizing ulcerative gingivitis • rapid gingival recession • dental erosion • possible corrosion of gold restorations

Table II

Effects of Cocaine Abuse

Cardiovascular effects	Central and behavioural effects
• hypertension • tachycardia • dysrhythmia • hypoxia • myocardial infarction • hemorrhagic stroke • pulmonary edema • dissection or rupture of aortic aneurysm • cardiac arrest	• sense of well-being, grandiosity • elation • anorexia • restlessness, agitation • nausea • headache • psychotic states/paranoia • pupillary dilation • tachypnea • hyperpyrexia • seizures

candida infections are also more common in this patient population.^{4,7,25}

Literature Review

The case of a 37-year-old woman who developed a palatal defect several years after a nasal septal perforation is described by Sastry and others.¹¹ Her long history of cocaine abuse continued despite initial violation of the septal structure. The authors postulate that vigorous self-debridement of intranasal crusts with cotton swabs, pens, and pencils contributed to the perforation process. Unfortunately, such debridement is well tolerated because of the profound local anesthetic effects of cocaine.

In another case, Sawicka and Trosser detail the findings of a 34-year-old man who presented himself at the hospital with a six-day

history of clear nasal discharge and malaise.²³ The patient, who had lost his sense of smell, admitted to a 19-year habit of cocaine snorting. A CT scan showed bone loss of the cribriform plate, and suggested a cerebrospinal fluid (CSF) leak through the right ethmoid sinus. A bifrontal craniotomy and fascia lata graft were performed to correct the persistent leak. The cribriform plate was noted to be paper thin and mobile. Histology of the olfactory bulb showed chronic inflammation change and gliosis.²³

Cocaine abuse can cause other complications. Newman and others report the case of a 43-year-old man with bilateral optic neuropathy and osteolytic sinusitis, secondary to cocaine abuse.²² The patient had initially described "holes" in his vision that progressed over a six-month period. He admitted to a 15-year history

of daily intranasal cocaine use. MRI studies revealed extensive bony destruction of the nasal cavity, paranasal sinuses, the floor of the anterior cranial fossa, and the anterior surface of the clivus. After a four-month cessation of cocaine use, his visual acuity stabilized and his visual field deficits had not progressed.²²

Schweitzer describes two patients with severe and different complications as a result of cocaine abuse.¹³ The first patient developed total nasal septal necrosis, saddlenose deformity, and osteolytic sinusitis from chronic snorting. Her presenting symptoms included a five-year history of postnasal drainage, halitosis, intermittent epistaxis, and rhinitis. After a proper workup and detoxification, the patient underwent bilateral antrostomies and nasal reconstruction with auricular cartilage. With daily saline lavages of the nose and sinuses, her perinasal symptoms subsided. The second patient experienced tracheobronchial rupture with subcutaneous emphysema and pneumomediastinum after smoking "freebase" cocaine.

One of the most destructive cases of intranasal cocaine abuse to have been documented appears in the journal *Revista Medica de Panama*, where Sousa and Rowley detail the presenting complications, progression, and eventual death of a 22-year-old woman.¹² In this case, the patient described a two-year history of nasal obstruction, halitosis, progressive destruction of the septum and hard palate, purulent rhinorrhea, intense facial pain, strabismus, blindness in her left eye, and a recent reduction in the visual acuity in her right eye. Her diagnostic workup included physical, ophthalmoscopic, and rhinoscopic examinations, multiple biopsies, bacterial and fungal cultures, and CT scans. These studies confirmed the absence of the nasal septum, turbinates, and medial walls of the maxillary sinuses. They also revealed sclerosis at the base of the skull and a midline lesion extending from the ethmoid sinuses to the orbital apexes. Initial

treatment with prednisone and antibiotics resulted in improvement of the visual acuity in her right eye and resolution of the retro-ocular pain. Several months later, suspected of having renewed her drug habit, the patient was readmitted to hospital with meningitis. Her level of consciousness began to deteriorate on the twelfth day. A brain scan revealed an abscess within her frontal lobe. An emergency craniotomy was performed. The patient remained comatose and on a ventilator for 15 days. Death occurred as a result of *Pseudomonas pneumonia*.

Other cases of brain abscesses resulting from habitual cocaine snorting have been reported.^{21,27} Possible routes of bacterial inoculation include direct spread through the areas of osteitis (i.e. cribriform plate, frontal sinus) or as a septic thrombophlebitis spread along the associated valveless venous vasculature.²¹ These expanding cerebral abscesses are usually fatal.^{12,21}

Summary

Recreational drug use is reaching epidemic levels in North America. There are numerous considerations in the provision of dental care for patients with a cocaine abuse problem. Given the fundamental importance of identifying whether cocaine is a factor in the patient's management, the dentist should look for signs and symptoms indicating an abuse problem (Tables I and II). An appropriate medical history, a detailed examination of the orofacial anatomy, routine vital signs, and an understanding of the behavioural characteristics of an addict will help the practitioner recognize patients suspected of cocaine abuse. A patient with a substance abuse problem will frequently exhibit "drug-seeking" behaviour.

The family dentist should know that the injection of local anesthetic with epinephrine must be avoided for at least six hours after cocaine consumption.¹⁸ Some sources suggest the use of epinephrine in either local anesthetic or retraction cord is contraindicated for at least 24 hours after cocaine

use to prevent "sympathetic overload" resulting in a hypertensive crisis, cerebrovascular bleed, myocardial infarction, tachyarrhythmias, and/or cardiac arrest.^{21,28} Lidocaine without vasoconstrictors will have an additive effect with existing cocaine in reducing the patient's threshold for seizure activity.^{4,5} As well, general anesthesia poses significant cardiovascular risk and should be avoided with the chronic cocaine user.⁴

Ingesting powdered cocaine orally or nasally can be extremely destructive to the periodontal and midfacial anatomy. Once alerted to an abuse problem, the informed dentist can educate his or her patient about the progressive consequences of continued usage and provide a referral for professional counselling. Dental treatment should be deferred to an appropriate time when life-threatening complications can be avoided. Then, successful restorative, periodontal, and even obturator therapy can be provided.

An understanding of and vigilance for cocaine abuse in the dental patient can reduce, but will not eliminate, the potential for a related crisis in the dental office. Dental practitioners and their staff should remain capable of recognizing and managing a cocaine-related medical emergency. Dentists and dental societies must continue to educate the general public about the local and systemic hazards of this drug. ■

Dr. Villa is an oral and maxillofacial surgeon and head of dentistry at The Sudbury Regional Hospital in Ontario. He also maintains a private practice in Sudbury.

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Letters

Continued from page 194

'50s, I was horrified at the dental condition of the children. In the '60s, I was recruited by the Junior Red Cross to provide treatment for the children on neighbouring reserves. Again, the unmet needs of children and adults were overwhelming. The same applied in the Baie Verte area of Newfoundland, where I worked in the '70s.

In Saskatchewan in the '70s, concern and political will provided the impetus for the training of dental therapists, thereby ensuring accessible, quality dental care for rural children. At about the same time, a similar program was initiated by the federal government to train dental therapists to work in isolated northern communities. These dental auxiliaries, however, were not welcomed by the profession.

My experience has shown that the majority of care for those homebound by chronic disease, age, accident, or debilitating conditions can be provided on site by a properly trained and equipped team consisting of a dentist and a dental therapist. I emphasize the importance of providing treatment where the patient is, if at all possible. There are efficient and very portable devices available to provide treatment to those in bed, wheelchair or geriatric chair, whether in long-term facilities (which have neither the space nor the dollars to equip dental suites), hospitals, or private homes.

There will be lots of goodwill towards our profession if we can provide the leadership and innovation needed to meet the dental needs of the homebound. Let's not leave the initiative to someone else!

In March of 1998, an illness forced me to cancel my rather unique program. I am hopeful that quality dental care, which we all expect, will be available when and where we require it.

Douglas E. Phillips, DDS, DDPH
Nipawin, Sask.

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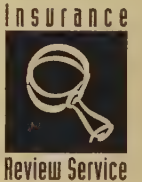
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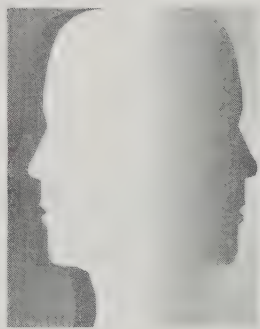
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A Question of Ethics

Monique Tremblay, DMD

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With talk about ethics becoming so popular, a look at the precise meaning of this word is in order. For many people it brings to mind a code of ethics, a set of laws and principles that professionals must observe in the course of their work.

Defined as the "science of morals, moral principles, rules of conduct" (*The Concise Oxford Dictionary*), the word "ethics" has to do with human actions and presupposes a set of rules for proper conduct. It can be considered another way, in terms of form rather than content. This is how concepts like duty, moral obligation, responsibility and moral judgment arise. From this perspective, ethics relates to an ability to think critically, one that limits our freedom to act.

Clearly, issues like euthanasia, assisted suicide and reproduction, and genetics are more likely to create controversy and make the headlines than any ethical matters pertaining to dentistry. Professional ethics are an integral feature of our society, however, and sometimes date back many years (as in the case of the Hippocratic Oath taken by physicians). In Quebec, this tradition was built upon in 1974, when the regulatory authorities (orders) were established, and

in 1994, when codes of ethics in health care and social services became compulsory — later becoming the norm for a variety of industries and organizations. Today, the pursuit of total quality, with its emphasis on the client above all else, also has an ethical basis.

However, with the proliferation of these codes arise questions such as the following: Is respect for others more apparent in our society? Do dentists put the welfare of their patients before their own personal gain? Lastly, is their attitude potentially harmful to their colleagues?

To answer these questions, we can draw a parallel with ethics in journalism. Many of us felt that such ethics were noticeably lacking in last fall's television broadcast *La facture*. In this program, one of our colleagues was attacked despite being unable to defend himself. It was clear that the same thing could happen to any of us and that the journalist's assumptions could have consequences long before any legal decision was reached. Perhaps he should have waited until the case went to court before going on the offensive.

It was alarming to see the treatment of this case, in which a dentist was accused of causing paresthesia of the lingual nerve during a

surgical extraction. Without wishing to get into the legal issues, we may still express an opinion on the ethics demonstrated by this journalist.

First, the dentist was not in a position to respond to the accusations against him, because his insurer threatened to stop representing him in court if he spoke up. Despite the obvious lack of balance, the journalist allowed the plaintiff to talk freely, thereby presenting only one side of the story. The journalist also implied that the dentist was "hiding" behind his insurer's letter to avoid talking.

Second, since the Saguenay-Lac-Saint-Jean region consists of a string of tiny municipalities, dentists in the area often serve small communities. It is easier to lose one's reputation than it is in a large city where anonymity rules. Through his disregard for this fact, the journalist could easily have ruined years of hard work in a matter of minutes. Fortunately, the public took all the circumstances into account.

What conclusions can we draw from this example in terms of a breach of ethics? First, considerable harm can be done to an honest person with little benefit to

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Balanced Fund (KBSH)	0.2%	9.7%	9.0%	9.6%	✓
Balanced Fund NR (KBSH) ^{†††}	n/a	n/a	n/a	n/a	
Ethical Balanced Pooled Fund (Ethical Funds) ^{††††}	-9.6%	9.6%	8.5%	n/a	✓

CDA figures indicate annual compound rate of return. All fees have been deducted. As a result, performance results may differ from those published by the fund managers. CDA figures are historical rates based on past performance and are not necessarily indicative of future performance.

[†] Returns shown are those for the following funds in which CDA funds invest: ¹Trimark Canadian Fund, ²KBSH Special Equity Fund, ³KBSH US Equity Fund, ⁴Trimark Fund, ⁵Templeton Global Stock Trust Fund, ⁶McLean Budden Fixed Income Fund.

^{††} Returns shown are the total returns for the indexes tracked by these funds.

^{†††} Introduced in September 1998.

^{††††} The CDA Ethical Balanced Pooled Fund invests in a fund that mirrors the Ethical Balanced Fund (Ethical Funds).

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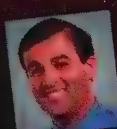
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* THE DENTAL ADVISOR, Vol. 15, No. 9, November 1998.

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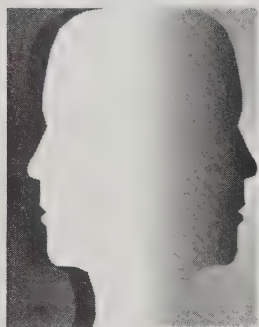


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DEBATE



Amalgamation: Choice or Necessity?

Donald F. Mulcahy, DDS

© J Can Dent Assoc 1999; 65:229-30

I would like to respond to Dr. Martin Deslauriers' imaginative and insightful article, "Amalgamation of Medicine and Dentistry: The Solution to our Problems?" (*J Can Dent Assoc* 1998; 64:590-1). It may be revealing of our profession that this interesting topic stimulated little or no response from dental organizations and academia.

The concept of stomatology, i.e. medically based dental practitioners, is not a new idea, but it is one that is becoming increasingly relevant. Such a system of study has existed in parts of Europe for a long time. In recent years, three Canadian dental schools have become partly or wholly incorporated into their respective medical faculties. However, it should not be assumed that these amalgamations have occurred for reasons of pure pedagogic altruism; on the contrary, they have likely happened out of dire politico-economic necessity, at least as far as the University of Alberta and the University of Western Ontario (UWO) are concerned.

In Alberta, the previous university administration concentrated on its sizeable deficit while ignoring its preposterously huge overhead and the resultant high cost of training each graduate. With a

reduced class size and a glut of dentists in the community, the threat of closure was real. Whether it was the faculty or the university that initiated the idea of amalgamation is not clear to outsiders, but the incorporation with medicine was probably an economic and administrative necessity. As for the UWO, whose mandate allowed for the joint training of dentists with doctors in the early years of study, it has always existed in the giant shadow cast by the country's largest and most prestigious school — the University of Toronto — which is only a couple of hours "down the pike." With its recent class reductions, Toronto has become eminently capable of absorbing the similarly reduced classes of the UWO — an attractive financial option for any fiscally stressed minister of education. Needless to say that by joining its department of medicine, a school greatly increases its protection against closure.

Although it would have been preferable for such unions to have evolved as a result of a sea change in the basic philosophical concept of dental education, amalgamation is still an attractive idea, not only because it increases a dental faculty's political clout in dealing with

government, but because it produces graduates who are more medically oriented.

Dr. Deslauriers' discussion may have focused on Quebec, but many of his concerns are equally valid in the rest of the country. I am not sure that the amalgamation he envisions would necessarily increase work for dentists unless provincial health care funding was opened up to them based on their MD qualifications (not wise to hold one's breath waiting for that!). One thing is certain — there is no way the medical profession would want them to work as practising physicians as well as dentists. It would have to be one or the other.

Dr. Deslauriers associates the lack of busyness in dental offices with a surplus of dentists, the intrusion of auxiliaries into the livelihood of practitioners, and economic hardship (or conversely, the high cost of dentistry).

The glut of dentists has been a concern for some time. Individuals have tried to stimulate public discussion on this topic, but dental associations and academia — often working as allies — have not responded convincingly. It appears that ivory tower self-interest will continue to prevail until dentists start showing up in the headlines.

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The devolution of responsibilities to parodontal workers, originally projected by public health gurus as a panacea for affordable treatment delivery in publicly funded oral health systems, has had a devastating effect on the profitability of dental practices. Hygienists have mostly ended up in private practices while denturists thrive in providing mechanical solutions to biological problems on their own, autonomous premises. As mundane as basic oral hygiene procedures are, it may not make economic sense to pay someone else to perform them in a stringent marketplace. As for the capitulation of dentistry in allowing dental mechanics to rehabilitate the edentulous and partially edentulous population, let's not forget that provincial associations merely acquiesced to their governments' quest for "competition" in health care delivery (read, "cheaper dentures"!). With regard to the high cost of dental treatment, we should ask ourselves why employers are expected to partially fund our patients' dental treatment. We may be conveniently ignoring the fact that if our fees are beyond the financial reach of the majority of the working population, then maybe they are too high.

It is unlikely that dental faculties welcome an incorporation with medical faculties because, as Dr. Deslauriers points out, they suffer a loss of autonomy and prestige. Although an exciting prospect, total amalgamation is unlikely to occur unless the concept of a dentist as a non-medical practitioner is replaced with that of a stomatologist — a physician who has completed a basic medical course and then specialized in oral health. Would we then all be specialists? Would our treatment costs increase as a result? Would the public be any better informed about the range of our capabilities? Probably not. Patients would be in no better position to decide whether to see a general physician or an oral physician than they are now in having to decide between seeing a medical doctor or a dentist.

It appears that the conditions which cause dentists to search for solutions to our collective dilemmas are due, in part, to the lack of foresight and timely initiative on the part of our dental associations. If these organizations are seriously considering the issues that profoundly affect the average dentist, then we are rarely made aware of their efforts. They have been far too ready to accommodate governments and insurance companies, often at our expense. It may be time to request a more definitive response from the organizations that purport to represent our interests as to the future direction our profession is likely to pursue. ■

Dr. Mulcahy is a retired dentist living in Edmonton, Alberta.

The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association.

*A Question of Ethics
Continued from page 225*

the public. Second, the reputation of an entire profession can be tarnished through what I see as one journalist talking indiscriminately.

When one of us is on trial, a part of each of us is also on trial. We share values, not sanctions. So let's stick together and make every effort to avoid damaging our colleagues' names. ■

Dr. Tremblay was in private practice for 12 years before accepting a position at the Cégep de Chicoutimi where she currently teaches oral health techniques. She is president of the Société dentaire du Saguenay-Lac-Saint-Jean.

The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

INFORMATION PACKAGE

April 1999

This month's package contains a selection of reading materials on **oral piercing**. It is available to CDA members for \$5.00 plus applicable tax.

A complete list of information packages is available upon request by calling 1-800-267-6354 or can be easily accessed on the CDA Web site at **www.cda-adc.ca**. Once inside our site, please log into the "CDA Members" area and click on "Resource Centre" to view the list of packages.



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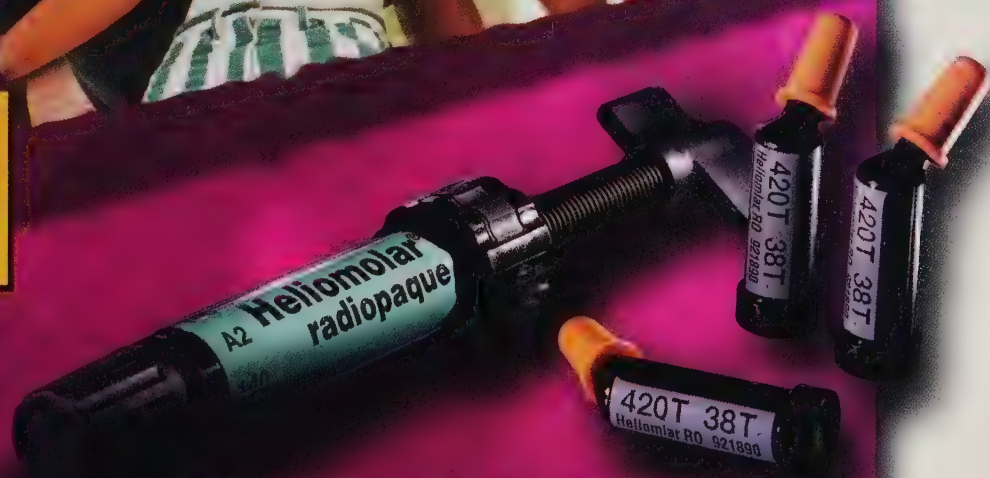
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Dr. Michael Hiel, recipient of a Canadian Gold Maple Leaf Coin in 1998, tees off for 1999 in his Aurum Ceramic/Classic golf shell and hat.

Photograph: Greg Teckles.

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<i>(in conjunction with the Saskatchewan Dental Convention)</i>	
New Glasgow, NS	June 17
<i>(in conjunction with the Nova Scotia Dental Association)</i>	
Kelowna, BC	June 18
Cornwall, ON	June 25
Grande Prairie, AB	June 25
Toronto, ON	July 9
Steinbach, MB	July 24
*Halifax, NS	August 4
<i>(in conjunction with the 1999 CDA Convention)</i>	
Edmonton, AB	August 19
Ottawa, ON	August 20
*Victoria, BC	August 27
Salmon Arm, BC	August 27**
New Glasgow, NS	September** (date to be announced)
Lethbridge, AB	September 24**

* SHOOT-OUT LOCATIONS ** qualify for 2000 Shoot-Outs



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CDA Convention Halifax, Nova Scotia

August 4-8, 1999 Hosted by the Nova Scotia Dental Association



Enjoy the beauty of Halifax at the Convention

The 1999 CDA Convention, hosted by the Nova Scotia Dental Association, offers a dynamic scientific program and the latest in dental technology and procedures. Held at the World Trade and Convention Centre, the convention also offers its delegates and their family members local attractions, guided tours and special events. Visit Peggy's Cove, join in on our annual Fun Run or tour the city. Your kids will love our Children's Program, where they can take part in games and fun events aimed specifically at young people. Don't miss the Bluenose Harbour Tour, and your opportunity to walk the deck of Canada's most celebrated schooner. Two evening events have been organized to allow delegates time to socialize in a relaxed setting. A golf tournament planned in Halifax on Wednesday August 4, compliments the CDA convention by mixing business with pleasure. Another attraction not to be missed is the Busker's Festival, taking place on the waterfront. We look forward to seeing you at the annual CDA Convention.

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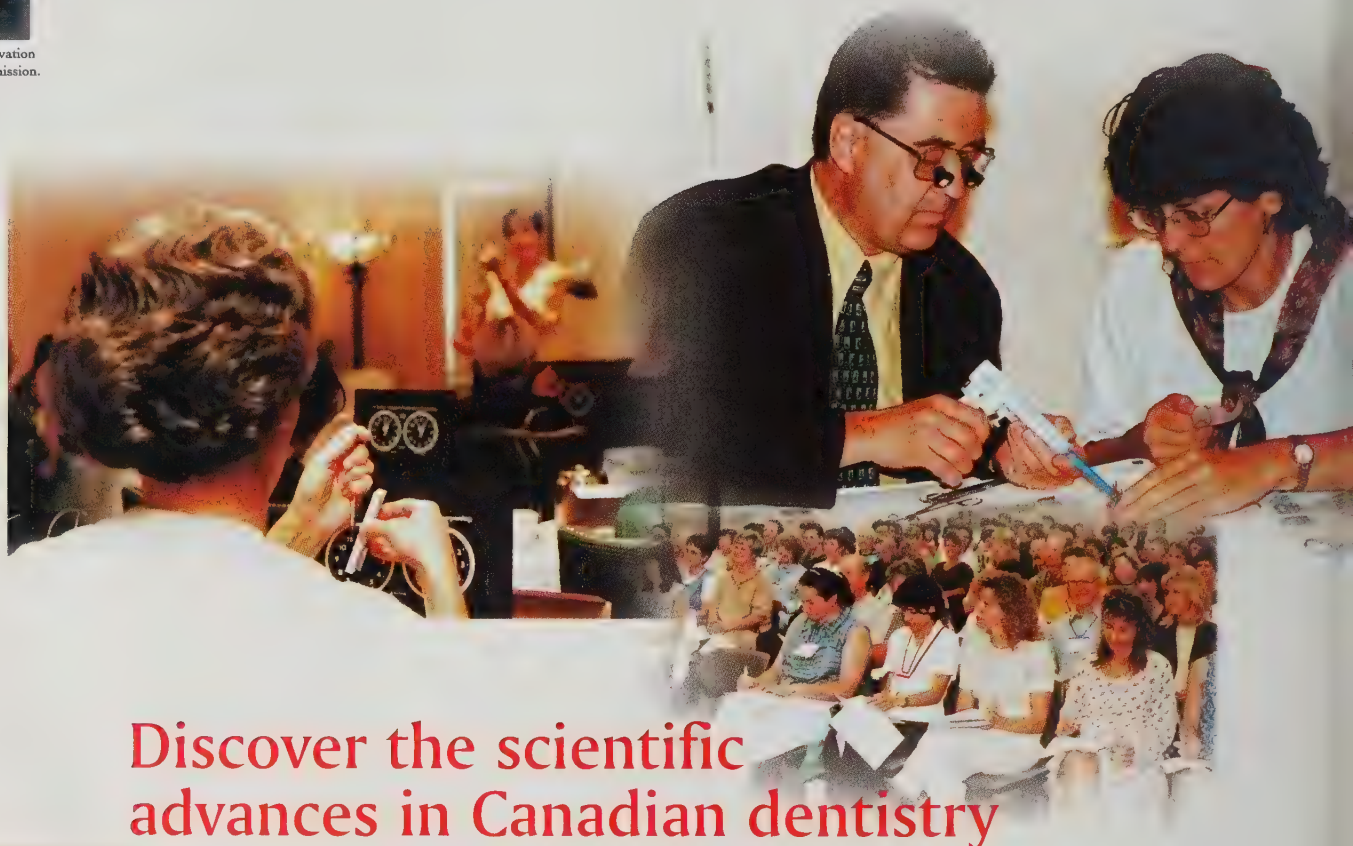
For more information contact CDA Convention at 1-800-267-6354 or (613) 523-1770 Fax: (613) 523-3062 Web site: www.cda-adc.ca
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CDA Convention Halifax, Nova Scotia

August 4-8, 1999 Hosted by the Nova Scotia Dental Association



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BRITISH COLUMBIA - North Vancouver:

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NEWFOUNDLAND - Corner Brook: Established solo family practice, 2,500 plus patient base. Sale or associateship leading to sale. Three operatories (one hygiene). Computerized with efficient recall system. High gross, low overhead situation. For further information contact: Bill Tingley, tel. (800) 565-1502 NB/NS/PEI/Nfld., or (902) 835-1103 in Halifax and enquiries outside toll-free area. D394

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NOVA SCOTIA - Wolfville: Dental practice for sale in small university town. My practice is centrally located in the Annapolis Valley town of Wolfville, Nova Scotia. Wolfville, seat of Acadia University, situated on the Minas Basin (about 1 hour's drive from Halifax) is the cultural/intellectual centre of the Annapolis Valley. The region offers recreational opportunities - downhill skiing at Martock (1/2 hour's drive), ocean beaches (15 minute's drive), excellent golf course (10 minute's drive); moderate climate. My dental practice was established in 1975, on Main Street, two operatories, private office, building offers potential for expansion. I am willing to provide time and assistance for a smooth transition. Reply to: CDA Classified Box # 2771. D454

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ONTARIO - Cambridge: Dental practice opportunity. Looking for a fresh opportunity in Cambridge, Ontario? This is an excellent chance to purchase a thriving, modern practice either immediately or

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SASKATCHEWAN - Moose Jaw: Excellent opportunity. Dentist retiring from well-established, three-man practice. Willing to associate for smooth transition. Presently working a 4-day week with hygienist and therapist. Seeing 35+ new patients per month and grossed \$630,000+ in 1997. Enthusiastic and fun staff. Computerized office with five operatories in a 14-operator space. Ultra-modern equipment with intraoral camera, air abrasion unit, cephalometric and panoramic X-rays. Beautiful new office located in prime area of Moose Jaw, Saskatchewan. Population 35,000. Rural drawing area of 80,000. Contact: R. Tessier, DDS. Tel. (306) 692-6438 or (306) 692-8221, fax (306) 692-3177, e-mail MJ241@focalpt.net D405

SASKATCHEWAN - Moose Jaw revisited: With reference to our other ad "Excellent opportunity - dentist retiring..." (D405), here is more information: Dr. Mike Barker has been with me since 1980 and Dr. John Steel has been with me since 1991 when my other partner retired. We share a beautiful office space - brand new in 1990. Our entire staff is a fun, dynamic group who share social time as well as office time. We all currently work 4-day weeks - in at 7:45, out by 4:15, and enjoy at least 6 weeks vacation per year. If you would like photos of the office contact: R. Tessier, tel. (306) 692-6438 or (306) 692-8221, fax (306) 692-3177, e-mail MJ241@focalpt.net D461

SASKATCHEWAN - Regina: Prime dental facility, 1507 sq. ft. plumbed and electrified. Available June 1, 1999. Lease negotiable. Contact: Dr. Berdan and Dr. Radomsky, tel. (306) 586-6077. D452

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D445



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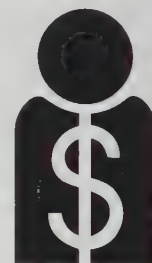
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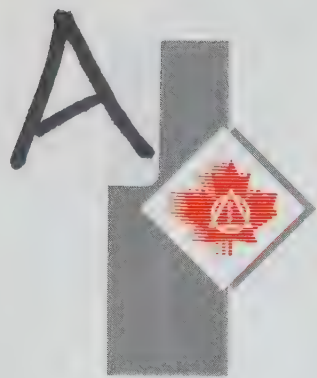
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JCDA

Journal of the Canadian Dental Association

Vol. 65, No. 5

May 1999



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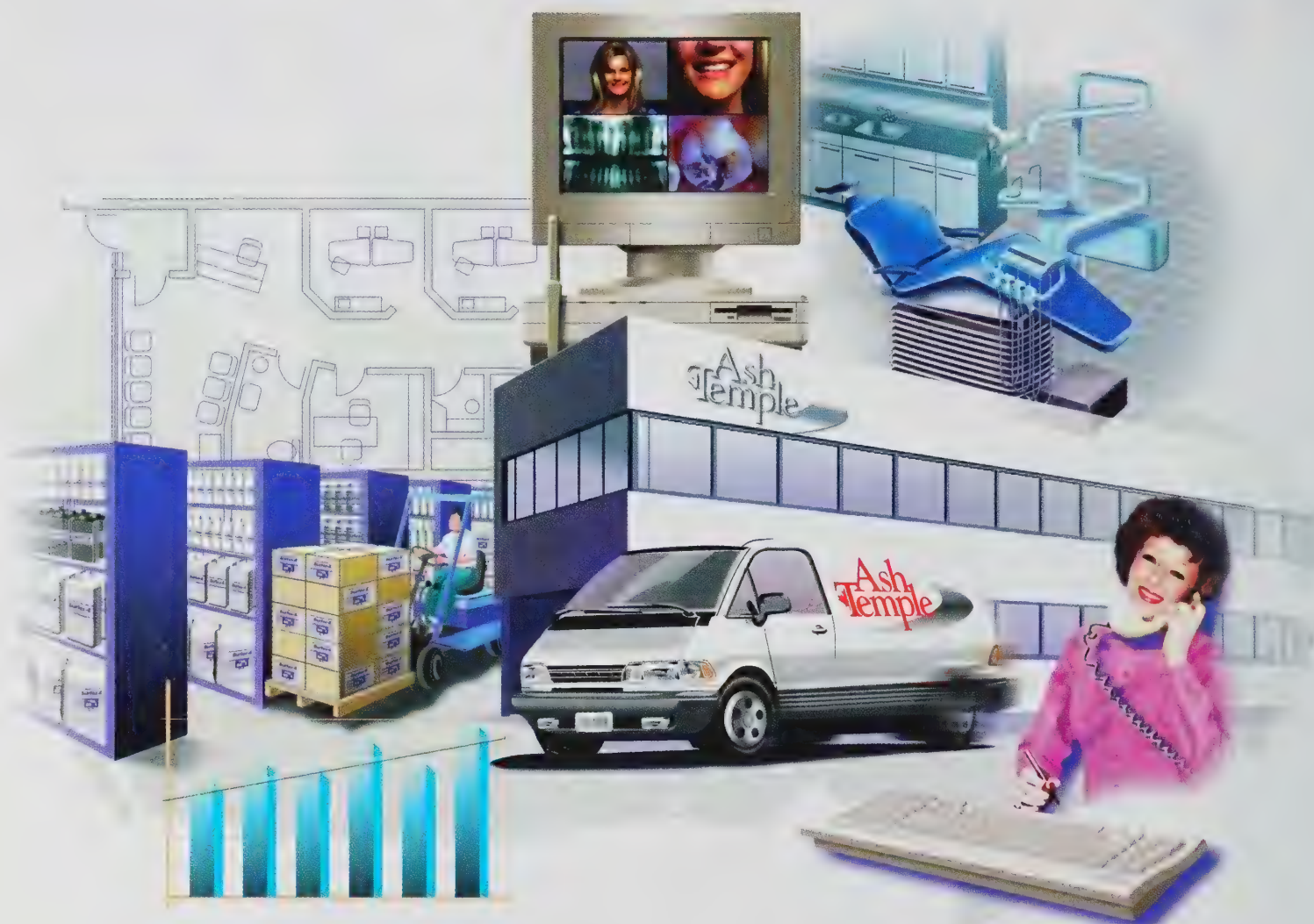
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Editorial

MORE THAN A NEW LOOK



Dr. John P. O'Keefe

In presentations to audiences over the past year, I have stressed that the environment in which the *Journal* operates is changing at a dizzying pace. For example, the dental profession is adapting to a different climate, the CDA is a federation in transition, and the world of publications has been turned upside down with the advent of electronic publishing.

Now anyone with access to the Internet can be a publisher; a good Canadian dental example of this is to be seen on the Canaden Web site at www.canaden.com. Among the interesting features of this site are the "Case of the Week" section and the discussion groups. The cases, posted by the members of the discussion groups, certainly pose interesting clinical problems and often present innovative solutions. The members of this and another listserv to which I belong (Atlantic Dental Listserv, adl@ns.sympatico.ca) exchange high-quality information that is very pertinent to dental practice.

One might validly ask why there is a need to continue publishing journals like the *JCDA* when dentists can "do it

all themselves," and when there are so many alternative information sources. I contend that the *JCDA* will be more important than ever as a trustworthy source of information for Canadian dentists, but only if the publication operates in new ways.

Like you, the individual dental professional, the *Journal* has to adapt to the changing environment. Some strategies for success include nurturing the trust of those who consume our services, providing services that are needed and wanted, keeping overhead down, and not wasting resources or duplicating efforts.

Speaking of using resources wisely reminds me of the presentation given by Dr. Serge Vanry at the recent CDA Board of Governors meeting in Ottawa. Dr. Vanry is president of the newly formed Association of Dental Surgeons of British Columbia (ADSBC). He was addressing the assembly after it had voted to accept the ADSBC as a corporate member of CDA.

Among the many forceful points made by Dr. Vanry, two in particular struck a chord with me. He said it is imperative for dental associations to listen carefully to their members and important for them to act frugally. I take both of these exhortations very seriously.

As we must operate within a tighter budget, the paper version of the *Journal* will be slimmer (56 pages on average). The editors and writers on staff are working closely with authors to produce shorter and tighter articles. The scope of the publication is being focused on clinical topics and issues facing the profession. We are glad to be receiving more and more input from readers in the form of letters and debate pieces; they give life to the *Journal* and are an effective way of tackling a variety of subjects.

I hope to direct more readers to our excellent CDA Resource Centre to get additional information on topics that are covered in these shorter *Journal* articles. I would like to save trees and direct you to existing high-quality literature,

rather than publish lengthy new articles on topics that have been well covered elsewhere. I would also like to follow the example of the *British Medical Journal* (www.bmj.com) in publishing shortened versions of articles in print, with the full text of the articles available in the electronic version of the *Journal* (*eJCDA*). Our resources are limited and we must find new ways to live within our means.

This edition of the *Journal* represents a departure in more ways than one. The new look for the publication that we have been working on over the past year is finally launched. I really hope that you find the *Journal* easy to read and interesting.

This month's edition is different also because many of the usual elements of the publication are set aside until next month so that we may give you a sample of the material that Canadian speakers are presenting at the 1999 CDA convention. We present ten short articles from clinicians and practice management experts who you can hear in Halifax.

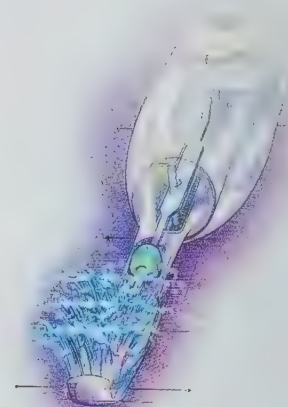
I believe it is valid to devote one edition of the *Journal* per year to promote the convention and to showcase the excellent Canadians who provide continuing education sessions at dental meetings. I have already approached the organizers of next year's convention, to be held in Vancouver in March 2000, with the idea of soliciting clinical articles from the Canadian speakers on that program.

I will be looking forward to your feedback about the redesigned, slimmer paper *JCDA* and what you think about the *eJCDA*. I also want suggestions from you about how we in the publications area and the Resource Centre can provide you with trustworthy information in the most efficient and effective manner possible.

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1. McInnes et al, *Oral Micro Immuno*, 1993; Wu-Yuan et al, *J Clin Dent*, 1994. 2. Tritten/Armitage, *J Clin Perio*, 1996; Johnson/McInnes, *J Perio*, 1994. 3. O'Beirne et al, *J Perio*, 1996. 4. Among U.S. periodontists expressing a preference. Data on file. 5. Based on 14,783 survey respondents in the U.S.A. 6. Stanford et al, *J Clin Dent*, 1997 (in vitro).

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President's Column

SETTING SAIL FOR NEW HORIZONS



Dr. Richard D. Sandilands

This edition of the CDA *Journal* marks another milestone in the ongoing development of our flagship publication. *Journal* editor Dr. John O'Keefe has expended considerable time and effort in delivering his message of futuristic thinking and journalistic revival across the length and breadth of the academic and publishing communities in this country. I am pleased to see that he has taken many of the views and opinions he received to heart, and has made several exciting changes to the format and content of the *JCDA*, as we are likely to refer to it from now on. The *JCDA* is a real example of our determination to embrace our changing environment and respond to the needs of the profession as they evolve over the coming years.

There is another reason, however, why this is a special edition. Coincidentally, the May *JCDA* is also a pre-convention issue highlighting the Canadian Dental Association/Nova Scotia Dental Association joint convention to be held in Halifax from August 4 to 8, 1999.

It is important to note that for the first time at a CDA convention, the majority of speakers will be Canadian. For many years I have maintained that Canadian dentistry has produced a great many capable and qualified scientific speakers, most of whom get passed over in the rush to access big names from the U.S. This year's convention program reinforces my conviction.

Our speakers, selected from across the country, include: Dr. Trey Petty, from Calgary, who will be reviewing the latest infection control procedures; Dr. Mike Suzuki, from Winnipeg, who will be discussing posterior composites; and Drs. David Matear and Edward Philips, both from Toronto, who will be discussing geriatric dentistry and the classification of smiles, respectively. Of course, convention home-town speakers will be making a significant contribution to the program, with Dr. David Precious lecturing on cleft palates, Drs. Reginald Goodday and Archibald Morrison reviewing medical emergencies in the dental office, and Dr. Scott MacLean discussing dentistry and the Internet. Practice management is also an important component of the convention; speakers presenting sessions on this topic will include Anita Jupp, from Burlington, Ont., who will talk about continuing education, and Tim Brown, from Toronto, who will address the issue of practice valuation.

Finally, one of the key speakers this year will be Dr. Terry Donovan, a graduate from the University of Alberta who is currently executive associate dean for academic affairs and chairman of the department of restorative dentistry at the University of Southern California. Dr. Donovan has reached international prominence for his knowledge of current techniques in esthetics and for his speaking abilities. He will be presenting two sessions at the convention, a full-day, pre-convention limited attendance clinic on contemporary fixed prosthodontics and a seminar on adhesive restorative dentistry. I encourage those of you wishing to attend the pre-

convention clinic to register now so that you will not be disappointed.

We have arranged for all of these speakers to provide us with a short article for this month's *Journal* and look forward to their presentations in Halifax. The convention committee, headed by Dr. Helen Middlebrook, for the NSDA, and Dr. Phil Greeves, for CDA, has done an incredible job of ensuring sessions will cover a wide range of topics relevant to our profession.

I know that the scientific presentations will be attractive to most of you who are planning to attend this year's convention, but I would be less than honest if I didn't admit the real reason I am looking forward to attending the Halifax convention. The real reason isn't the myriad social events planned during the week or the huge lobster bash to be held at the end of the meeting. The real reason isn't the famous Nova Scotia hospitality that will surely sweep you off your feet, or the chance to play in the Aurum Ceramic golf tournament at a private golf course very few people ever get to try out. The real reason I am looking forward to the 1999 CDA/NSDA convention is the opportunity to participate in the largest dental convention ever held in Halifax. It has been 10 years since we've had an occasion to meet there — let's not let this rare opportunity slip away!

I have already mentioned that I am looking forward to participating in the Aurum Ceramic tournament. I'd like to remind you that this competition will be your chance to enter the Dentistry Canada Fund/CDA President's Challenge. I will definitely be bringing my golf clubs to Nova Scotia, and hope all of you will be ready to answer my challenge and post a better golf score than your president!

In the interim, however, we look forward to hearing from you regarding the new *Journal* and trust we will benefit from your feedback. See you in Halifax!

*Richard D. Sandilands, DDS
President of the Canadian Dental Association*

1999 CDA Convention

Journal Contributors

I would like to extend my special thanks to the contributors of this 1999 CDA convention issue. All the authors responded quickly and cheerfully to my request for papers earlier this year, and have made a significant contribution to this special edition of the *Journal*.

I would also like to thank Dr. Alan Stewart of Windsor, Nova Scotia, for providing us with the cover artwork that evokes so beautifully the magic of the Maritimes, and Dr. Kevin Walsh, who put me in touch with Dr. Stewart.

Dr. John O'Keefe
Editor



Mr. Tim Brown

Mr. Brown is the president of ROI Corporation. Since 1974, ROI has appraised over 2,000 dental practices and sold over 600. Mr. Brown will be speaking at the CDA convention on Friday, August 6 (morning).



Dr. Terry Donovan

Dr. Donovan is professor and executive associate dean, chairman, department of restorative dentistry, and co-director, advanced education in prosthodontics, University of Southern California School of Dentistry, Los Angeles, Calif. He will be speaking at the CDA convention on August 4 (full-day, pre-convention course) and 5 (general attendance session, morning).



Dr. Reginald H.B. Goodday

Dr. Goodday is head, division of oral and maxillofacial surgery, department of oral and maxillofacial sciences, Dalhousie University, Halifax, Nova Scotia. He will be speaking at the CDA convention on Saturday, August 7 (morning).



Ms. Anita Jupp

Ms. Jupp is a dental consultant and international lecturer. She is also the director of the recently established ADEI (Advanced Dental Education Institute) for dental professionals. Ms. Jupp will be speaking at the CDA convention on Wednesday, August 4 (full-day, pre-convention course).



Dr. Scott MacLean

Dr. MacLean is a general dentist practising in Halifax, Nova Scotia. He will be speaking at the CDA convention on Saturday, August 7 (morning).



Dr. David Matear

Dr. Matear is chief of dentistry, Baycrest Centre for Geriatric Care, North York, Ont. He will be speaking at the CDA convention on Thursday, August 5 (afternoon).



Dr. Archibald D. Morrison

Dr. Morrison is assistant professor, department of oral and maxillofacial sciences, Dalhousie University, Halifax, Nova Scotia. He will be speaking at the CDA convention on Saturday, August 7 (morning).



Dr. Trey Petty

Dr. Petty is division chief, oral medicine, Foothills Medical Centre; director, oral medicine and surgery, Tom Baker Cancer Centre; associate professor, faculty of medicine, University of Calgary. Dr. Petty will be speaking at the CDA convention on Friday, August 6 (morning).



Dr. Edward Philips

Dr. Edward Philips has a private practice in esthetic dentistry in Toronto. He will be speaking at the CDA convention on Thursday, August 5 (afternoon).



Dr. David S. Precious

Dr. Precious is professor of oral and maxillofacial surgery at Dalhousie University in Halifax, Nova Scotia. He will be speaking at the CDA convention on Thursday, August 5 (afternoon).



Dr. Mike Suzuki

Dr. Suzuki is professor and head, department of restorative dentistry, faculty of dentistry, University of Manitoba. Dr. Suzuki will be speaking at the CDA convention on Friday, August 6 (full-day session).

A CALL FOR TABLE CLINIC PRESENTERS

Join us as a Table Clinic Presenter at the Canadian Dental Association's Annual Convention, hosted by the Nova Scotia Dental Association, on Thursday, August 5, 1999, at the World Trade & Convention Centre in Halifax, Nova Scotia.

Table Clinics are a concise and very informative way to learn about select topics in dentistry and related fields. The CDA table clinic program is for those who wish to share information with colleagues as well as for those who like to learn from their peers.

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The Classification of Smile Patterns

• Edward Philips, BA, DDS •

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When it comes to expressing emotions, members of widely different cultures have much in common. If people from various countries are shown a photograph of a happy, smiling face they usually agree in their interpretation. They also tend to concur over disgust, surprise, sadness, anger, fear and contempt. Such findings imply that beneath all the cultural complexity of mankind, there is a core of basic emotional expression that is understood all over the world.^{1,2} As best said by Darwin, it appears that we all smile in the same language.

Facial expressions have evolved over time, with changes in musculature around the mouth allowing for the development of new signals. For example, changes in the zygomaticus major, which moves the corners of the lips upward and backward, created our characteristic smile.¹

Today, the smile is easily the most recognized expression, used to convey to our fellow human beings a sense of compassion and understanding. The smile may well be the cornerstone of social interaction.

As a result of this evolution, the smile necessitates a natural architectural pattern that is pleasing to others. Our responsibility as dentists is to face this new challenge and acquire the skills to identify various smile patterns. Only with proper pre-treatment diagnostics and a set of objectively measurable parameters can we begin to deal with rehabilitating our patients' smiles.

Identifying Smile Patterns

Dentistry needs to develop a methodical classification to identify various smile patterns. Fundamental to our treatment are terms and classifications that standardize the myriad of individual dental problems and interpret them into vocabulary shared not only by patients and dentists, but by staff, laboratory personnel and regulatory bodies. Several branches of dentistry use classification systems; orthodontic occlusion, for example, is defined by a relatively simple three-type classification system. Similarly, periodontal furcations, traumatic tooth fractures and complicated oral facial surgeries are easily grouped and indexed.

Smile Styles

Although there are millions of different smiles — essentially as many as there are individuals — three basic smile patterns can be identified. Plastic surgeons, tasked with rehabili-

tating smiles, have generally identified the following neuromuscular smile patterns:³

1. The *commisure smile* is the most common pattern, seen in approximately 67% of the population. In this smile, typically thought of as a Cupid's bow, the corners of the mouth are first pulled up and outward, followed by the levators of the upper lip contracting to show the upper teeth. In this classic smile pattern, the lowest incisal edge of the maxillary teeth are the central incisors. From this point, the convexity continues superiorly with the maxillary first molar being 1 to 3 mm higher than the incisal edge of the centrals. A spontaneous smile results in a maximum movement of the commissure from 7 to 22 mm. Likewise, the average direction of movement of the commissure is 40 degrees from the horizontal (range 24 to 38 degrees). The direction of movement of most smiles is to the helix-scalp junction. When comparing the left to the right side, a large difference may exist in the extent of movement, but there is only a relatively slight discrepancy in the actual direction of movement when comparing left to right.⁴ Personalities with recognizable commissure smiles include Jerry Seinfeld, Dennis Quaid, Jennifer Aniston, Frank Sinatra, Jamie Lee Curtis and Audrey Hepburn.
2. The *cuspid smile* is found in 31% of the population.³ The shape of the lips are commonly visualized as a diamond. This smile pattern is identified by the dominance of the levator labii superioris. They contract first, exposing the cuspid teeth, then the corners of the mouth contract to pull the lips upward and outward. However, the corners of the mouth are often inferior to the height of the lip above the maxillary cuspids. Often there is a similar inferior turn of the maxillary premolars as opposed to the continuous convexity of a commissure smile. This "gull wing" effect is silhouetted by the gingival tissues, which correspondingly mimic the shape of the upper lip. In this smile pattern, the maxillary molars are often at or below the incisal edge of the central incisors. Eminent personalities with cuspid smiles include Elvis, Tom Cruise, Drew Barrymore, Sharon Stone, Linda Evangelista and Tiger Woods.
3. The *complex smile* characterizes 2% of the population.³ The shape of the lips are typically illustrated as two parallel chevrons. The levators of the upper lip, the levators of the corners of the mouth, and the depressors of the lower lip contract simultaneously, showing all the upper and lower

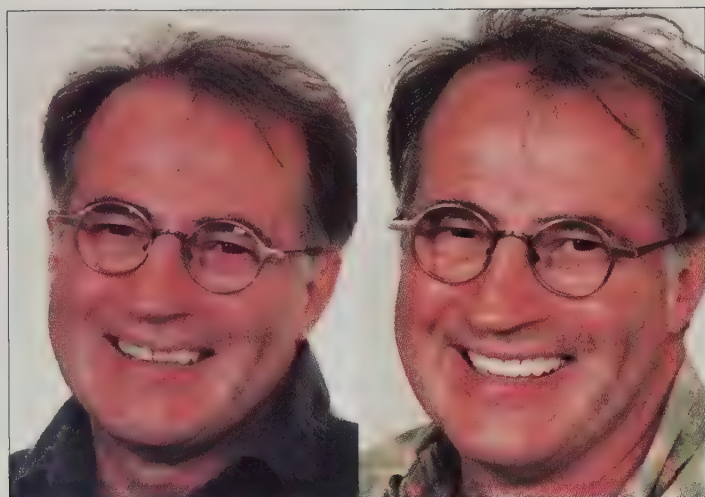


Fig. 1: Preoperative smile: Commissure, Stage III, Type 1. Postoperative: 15 porcelain veneers/crowns; Commissure, Stage IV, Type 1.



Fig. 2: Preoperative smile: Cuspid, Stage III, Type 4. Postoperative: 6 porcelain veneers; Cuspid, Stage III, Type 4.



Fig. 3: Preoperative smile: Complex, Stage IV, Type 2. Postoperative: gingivectomy and 20 porcelain veneers; Commissure, Stage III, Type 1.

teeth concurrently. The key characteristic of this smile is the strong muscular pull and retraction of the lower lip downward and back. In this smile pattern both maxillary and mandibular incisal planes are generally flat and parallel. Some celebrated personalities with complex smiles include Julia Roberts, Marilyn Monroe, Will Smith and Oprah Winfrey.

Although the basis for smile styles is neuromuscular, individuals can usually employ all smile patterns. Often a smile has been programmed by habit or by an inappropriate positioning of the underlying hard tissues. Restoring the smile can give individuals new confidence and can often change their neuromuscular programming.³

Stages of a Smile

There are four stages in a smile cycle:

- Stage I lips closed
- Stage II resting display
- Stage III natural smile (three-quarters)
- Stage IV expanded smile (full)

Of course, smiles vary and are unique to each individual. Many smiles do not differ much from a natural smile to an expanded smile. In these cases, treatment can often be restricted to the maxillary or mandibular anterior front six teeth. Other smiles have a very apparent discrepancy in display between these two stages, in which case, the treatment plan to esthetically improve the smile must be extended.⁵

Types of Smiles

There are five variations in which dental and/or periodontal tissues are displayed in the smile zone:

- Type 1 maxillary only
- Type 2 maxillary and over 3 mm gingiva
- Type 3 mandibular only
- Type 4 maxillary and mandibular
- Type 5 neither maxillary nor mandibular

In the vast majority of cases, people will be categorized under a single type, although it is possible to combine types, if necessary. For instance, a patient may have a complex smile prominently showing maxillary and mandibular teeth and have a maxillary "gummy" smile displaying more than 3 mm of gingiva. This odd smile pattern would be a type 2, 4.

Smile Classification System

The above categories can be systematically combined to create a standardization of terms objectively describing various smiles. Style, stage and type together provide a complete, easy and concise description for smile classification. Patients and dentists would both benefit from a nomenclature that is recognizable by definition. For example, the most common smile is a commissure smile, stage III, type 1. Examples of each smile pattern with corresponding classification can be seen in Figs. 1, 2 and 3.

Summary

Although "smile therapy" is still in its infancy, society has already placed a great demand on dentists to evaluate and treat

smiles. The smile classification scheme and vocabulary presented in this article will aid in discussions between patient and dentist regarding esthetic treatment. ♦

Acknowledgment: The author is grateful for his patients' permission to reproduce the photographs used in this article.

Dr. Philips has a private practice in esthetic dentistry in Toronto.

Reprint requests to: Dr. Edward Philips, The Studio for Aesthetic Dentistry, 700 University Ave., Toronto ON, M5G 1Z5.

The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

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May 1999

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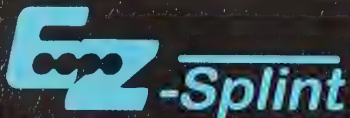
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A Prescription for the Successful Use of Heavy Filled Composites in the Posterior Dentition

• Donald F. Davidson, DMD •
• Makoto Suzuki, DDS, M.Sc., DMD •

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Restorative dentistry is making a definite paradigm shift. Our patients today have expectations that reflect a much better understanding of dental procedures than we might have seen two or three decades ago. Patient expectations have moved from maintenance of function solely to maintenance of function with an insistence on esthetics as well. Today, a practitioner must be able to work on a damaged tooth and return it as close as possible to its immediate post-emergent state.

To assist us, manufacturers of composite resins have made appreciable advancements in their products. Currently available materials are significantly more wear resistant and esthetically pleasing, with much improved optical properties to enable colour matching and the maintenance of that colour over time. These materials are also significantly more manipulable, thus allowing a more satisfactory final result both visually and functionally.

Until relatively recently, we were ill advised to place posterior composites on occlusal surfaces for fear of having them wear away rapidly. One of the innovations accomplished by some manufacturers has been the improved distribution of filler particle sizes, such that inter-particle distance has been reduced and material packing efficiency increased. As well, there has been an increase in the effectiveness of the silanization of those filler particles, such that wear resistance of the finished restoration has been greatly improved.¹⁻⁴

The time has come, then, not to discard the cast gold and silver amalgams that have long been used for posterior restorations, but rather to broaden the possibilities by including modern composites.

Is composite resin better than the more traditional metallic restorations? There are a number of important issues to ponder:

- Canada's changing demography and a patient population dominated by the post-fluoride generation has resulted in lower caries incidence.⁵
- To place metallic restorations, specific cavity preparation must largely be adhered to and commonly results in the removal of sound tooth structure.

- Bondable restorations require a much more conservative tooth preparation and establish an almost-total hermetic seal of the cavity, if done properly.
- Tooth-coloured materials are esthetically preferred by patients over metallic restorations.

The challenge for the profession at large and for academia has been the need for wholesale change in the approach to cavity preparation. Today's practitioner requires a much more conservative approach that emphasizes the micro-mechanical principle of material bonding.

Cavity Preparation

Although parameters similar to those used for amalgam preparations were emphasized in the past, a more conservative tooth reduction in both extension and depth is commonly recommended today.^{6,7} Proper isolation of the operating field by means of rubber dam placement is mandatory when bonding material and composite resin are used. Because our composite materials bond better to enamel than to dentin, there is no need to prepare into dentin where decay has not penetrated or extended.

Decay is removed and extended to ensure complete decay removal; the practitioner's only concern should be access to the prepared cavity to effect placement of the restorative materials.

In principle, proximal box preparation should result in the cavosurfaces being at right angles to the enamel surface vestibularly and lingually. Gingival floors should clear the contact apically and be butt joined.⁸

In Class II situations, pre-wedging ultimately results in a tighter composite contact to the approximating tooth. Aggressive wedging immediately after rubber dam placement will result in slow separation while cavity preparation is done. Wooden wedges (Premier Dental, Norristown, PA) also protect the rubber dam septa during the cavity preparation and prevent salivary seepage. With the cavity prepared, the wedge or wedges are removed, an appropriate matrix is placed and the wedges are aggressively replaced.

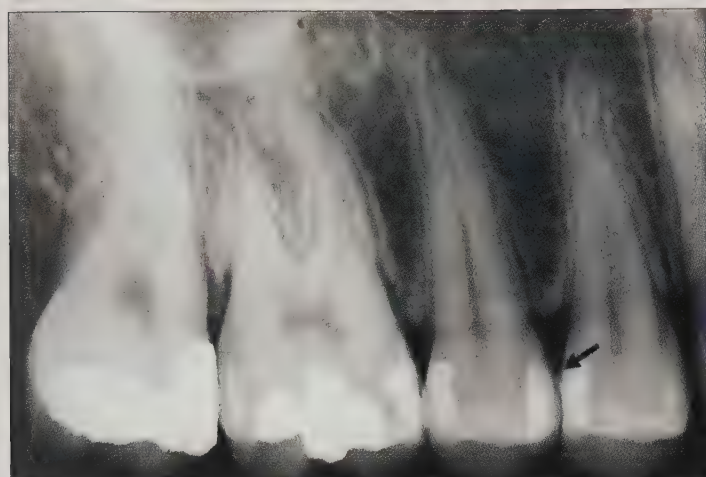


Fig. 1: Post-operative radiograph showing ideal proximal contour of the composite restoration (arrow).



Fig. 2: Hand instruments used for contouring the occlusal surfaces.



Fig. 3a: Restorations placed on lower first molar with product T after 4 years. No evidence of crevice at the cavosurface or marginal staining (Alpha).



Fig. 3b: Restorations placed on lower first molar with product Z after 4 years. No evidence of crevice at the cavosurface or marginal staining (Alpha).

Choosing a Matrix

One of the major shortcomings associated with the use of composite in Class II situations is the difficulty of establishing a convex, positive proximal contour (Fig. 1). To achieve this contour, the matrix of choice is ultra-thin, contoured and metallic, which eliminates any of the plastic bands available today (the thinnest of which is 0.0050 inch [127 μ m]). If physically possible, the matrix should be precontoured to create a natural tooth convexity in the finished restoration. Even the very viscous packable composites have difficulty distending the matrix toward the approximating tooth surface and maintaining that dimension.

A very good matrix is the precontoured sectional matrix, which has a thickness of 0.0015 inch (38 μ m) (ComposiTight, Garrison Dental, Spring Lake, MI; Contact Matrix, Danville Eng. San Ramon, CA). This type of matrix can be very difficult to place if the proximal box is very conservative such that sufficient clearance is not available from the adjacent tooth. The sectional metal band kit comes with retainer rings that can

be used to secure the open ends of the sectional band against the tooth interproximally. We have found that condensation pressure of these filling materials is insufficient to force significant amounts of material out beyond the vestibular and lingual of these bands and, with care, flash tends to be minimal. In cases where the proximal box is kept conservative, dead soft 0.001 inch (25 μ m) (Ho Band, Lorvic, St. Louis, MO) uncountoured circumferential bands can be used with success, well burnished and aggressively wedged. Precontoured circumferential metal bands are unsatisfactory because of their relative thickness (0.0025 inch [64 μ m]).

Material Placement

Total etch for 15 seconds with 37% phosphoric acid is necessary to effect a proper hybrid layer and a highly if not totally effective seal against fluid movement after bonding agent placement.

In the posterior composite placement done in our clinical trials, total etch has never been implicated in any post-operative sensitivity, probably because of the careful control of



Fig. 4a: Restorations placed on upper first molar with product T after 4 years. Slight catch at the cavosurface margin (Bravo).



Fig. 4b: Restorations placed on upper first molar with product Z after 4 years. Slight catch at the cavosurface margin (Bravo).

the moisture level post-etch and wash, such that “moist” bonding could be effected.⁹

A generous coat of bonding agent is applied and maintained wet for a minimum of 30 seconds on a moist internal cavity surface. The preparation is then gently air dried to encourage the hydrophilic carrier to evaporate, leaving the resin component within the cavity walls. The bonding agent is light cured, placed again, immediately carrier evaporated and light cured again. Sufficient curing is accomplished with a 10-second cycle.

If internal cavity surfaces are deemed deep relative to the pulp — i.e., less than 1 mm from the pulp — a glass ionomer base is recommended before acid etching for the following reasons:

- Resin bond strength to partially demineralized dentin or deep dentin is greatly compromised, allowing a gap to develop at the interface after the placement of composite resin.¹⁰
- Glass ionomers undergo minimum polymerization shrinkage during the setting reaction, which tends to preserve the bonded interface.
- The presence of the chalky-textured glass ionomer can be more easily seen should the cavity need to be re-entered in the future; a composite bonds directly to the internal prepared cavity surfaces.
- Fluoride release is beneficial for the remineralization of the surrounding dentin.¹¹
- In our clinical experiences, post-operative sensitivity is completely negated with the use of glass ionomer cement as a liner. The reason is not totally clear; however, the chemical bonding of glass ionomer to tooth structure and the minimum curing shrinkage may translate into a more complete hermetic seal in the final restoration.

After the clinician confirms the proper set of the glass ionomer liner, the cavity is etched, washed and gently air dried. The bonding agent is placed with a brush to avoid excess pool-

ing. If thinning is necessary, it should be done with the brush, as air thinning tends to compromise hybrid layer integrity.^{12,13} When this integrity is compromised, microleakage often results, with subsequent sensitivity, marginal stain and decay. As well, a thick adhesive surface can appear as a radiolucency in subsequent radiographic surveys due to the limited or no radiopacity.

Without exception, all bis-GMA- and UDA- (urethane diacrylate) based composite resins undergo contraction upon polymerization, leaving the stresses to build within the cured composites. To minimize these contraction stresses, modified light curing methods (e.g., pulse curing, soft curing, etc.) have been postulated;^{14,15} however, the clinical significance of these methods has not been determined. The greater the bulk of material, the greater the shrinkage and, hence, the greater the stress placed on bonded interfaces.¹⁶ Another serious consideration should be the gingival margin in a Class II situation. If decay is to re-occur, it is likely to do so at this juncture; to that end, a very thin (1 mm) layer of composite should be teased into the depth of the proximal box and light cured for a 20-second cycle. The proximal box up to the level of the pulpal floor can now be filled and cured for 20 seconds without danger of the material being pulled away from the critical gingival margin.

The remainder of the fill can be completed in one or two increments depending on the size of preparation. Overhead chair lights will stiffen these materials sufficiently to render them insensitive to sculpting in a short time; therefore, the light should be dimmed or turned away from the operating field during the contouring to allow a longer working time.

Contouring or sculpting is best accomplished using hand instruments with rounded tips, such as the PKT-3R, or cone-shaped tips, such as the BB21 (Hu-Friedy, Chicago, IL) (Fig. 2). These instruments can be used to tease the material into proper anatomical form and to remove any obvious excesses before curing.

After removal of the matrix, an additional 20-second cure lingually and another from the vestibular angle ensures a thorough cure. Incomplete polymerization at the time of place-

ment adversely affects several material properties such as wear (occlusally and interproximally), colour stability and marginal integrity with subsequent staining and recurrent decay.

Although post-operative sensitivity has been reported by others and attributed to cuspal stress¹⁷ due to curing contraction, we could not attribute any of the transient and minor sensitivity in our patients to this phenomenon.

Curing Lights

Research has shown that the intensity of light emitted by curing lights often leaves something to be desired. The light output of chairside curing lights should be routinely checked. Optimum curing of visible-light-cured materials requires approximately 400 mW/cm². Many curing lights in dental offices, because of design or unit condition, do not emit this level of light and should not be used. A handy curing radiometer is available to dentists and should be used at least weekly to guard against under cure and certain failure.¹⁸ Remember, the most common cause of composite failure is undercuring.

Finishing

Greater access for interproximal cavosurface finishing can be obtained by replacement of the wedge. One of the best rotating instruments to remove excess and refine occlusal anatomy is the posterior composite sculpturing diamond (Brasseler, Savannah, GA). When carefully used, this instrument effectively and expeditiously removes excess composite into desired occlusal anatomy. Judicious smoothing of the interproximal area below the contact is accomplished with narrow finishing strips and fine posterior composite finishing diamonds (E.T. Diamonds, Brasseler, Savannah, GA). Extreme care should be used to avoid removal of the interproximal contact. Abrasive finishing tips (Enhance Discs, Dentsply-Caulk, Milford, DE) can be used occlusally to smooth, refine and define anatomy. These tips, which come in a variety of shapes, remove material with heavier pressure and polish as pressure is reduced. They should be used intermittently to avoid overheating. Finishing composites precisely at the cavosurface margin requires experience and great care. Rapid, rough reduction will result in so-called "white margin." The use of a magnifying lens is highly recommended, as even the skilled operator can overlook excess material beyond the cavosurface margin.

After removal of the rubber dam, occlusion is checked and selectively reduced and repolished.

Clinical Observations

There are several acceptable and comparable composite materials available for restoration of posterior teeth. Using two popular heavy filled composites from two different manufacturers (Z100, 3M Dental Products, St. Paul, MN; TPH, L.D. Caulk, Milford, DE — referred to as product Z and product T, respectively), a total of approximately 140 relatively large composites were carefully placed in molars with functional occlusion and followed over a four-year period. Of these procedures, 65%

were Class II restorations involving more than two surfaces of the anatomical crown and several involved cusp replacement.

Recalls were conducted at six months, one year, two years and four years according to the American Dental Association (ADA) acceptance program guidelines. Parameters used and evaluated were those of the Ryge Method for Clinical Criteria recommended by the Council of Dental Materials of the ADA.¹⁹

Excellent colour stability, maintenance of anatomical form and interproximal contact were routinely observed.

Marginal integrity was excellent (Figs. 3a and 3b), with one-third of the sample restorations exhibiting slight marginal catches (Figs. 4a and 4b) and only 5% of the restorations requiring replacement after four years. Need for replacement was due to excessive marginal discrepancy (3), bulk fracture (2) and recurrent decay (2).

Secondary caries occurred on two side-by-side teeth interproximally — a reflection of the patient's poor oral hygiene.

Average occlusal wear from baseline was 43 µm with product T and 39 µm with product Z, with a range of 10 µm to 70 µm (ADA-restricted acceptance required a posterior composite to have an average four-year wear of no more than 175 µm measured from six months).

Over the longitudinal study of four years, the two materials proved to be excellent. They were durable and maintained extremely stable properties even in the face of very heavy functional stresses.^{20,21} It is our conclusion that, if carefully placed, these materials have a long-term expectation of excellence and wear, with function being well within ADA-accepted limits for restorative materials used in functional applications. ♦

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Continuing Education and Dentistry

• Anita Jupp •

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Iwish I had brought my team with me." This must be the number one remark overheard at continuing education seminars and conferences. Yet when a dentist brings up continuing education courses in the dental office, he or she often hears: "I'm not willing to give up a Saturday to take a dental course! Are you mad?" What we hear from auxiliaries, however, goes something like, "My dentist won't pay for me to take a course." Or, "I haven't taken a course in years, I don't need to."

With today's increasing clinical and technological advances, no one can afford to brush off continuing education or to diminish its value. We are lucky to live in a society that promotes and encourages higher learning. To take advantage of continuing education options, you need a dental team that is flexible and more importantly, that has the motivation and initiative to learn and grow.

As someone who has been involved in dentistry for 25 years, I cannot imagine doing things in a dental office the same way we did them 10, even five, years ago. The business side of the practice is changing as computers, the Internet, hygiene programs, patient education, new technology, and modifications to dental benefits are having an impact on our day-to-day activities. Clinically, advances occur just as frequently, proving that dentistry is still a challenging profession. Continuing education is key to moving ahead in this evolving environment.

If you want growth and continuing education to be part of your practice, you must make a point of encouraging these values.

Continuing Education and Your Staff

Demanding that team members take a course as part of their job is not the best way to encourage learning. If your staff do not want to be at a course, chances are they won't pay much attention or take many notes. Impress upon them that learning can be fun — attending courses does not have to be a boring or dreaded task. It's what we put into it that makes continuing education so rewarding. And getting together with other motivated dental professionals to share ideas can be beneficial.

To encourage your staff to be open to new ideas and techniques, you must set policies that are clear and well understood. Ideally, you should hire people who are already enthusiastic about learning. When interviewing candidates, ask them about their goals in dentistry, how they feel about continuing education, and if they are prepared to take courses on weekends.

Motivating existing staff who are not interested in taking the time to learn is difficult. However, as the business owner and employer, it is up to you to establish and enforce policies regarding conferences and seminars. If you want growth and continuing education to be part of your practice, you must make a point of encouraging these values. If a dental program is taking place on a weekend, you should pay staff for their time since it is part of the job. The same applies for evening programs or for any course that does not take place during office hours. One option is to schedule courses during regular office time. This isn't always possible, of course, which is why it is important to have clearly written policies on continuing education.

Staff that have been employed for a long time and that are totally resistant to change can really hold back a practice. If, after repeated requests on your part, these people are not willing to make an effort, it is probably in your best interest to let them go and to hire someone who is more motivated and enthusiastic.

Many team members are actually held back by the dentist. "Our practice has so much potential, but the dentist does not seem interested in changes or in learning anything new," is a comment I have often heard. As a business owner myself, I know it is not always easy to implement new ideas, as budget, time, staff training, and implementation considerations must be weighed carefully. To encourage dentists

who are not inclined to make changes, take the time to write out why the proposed changes would benefit the practice, the patients, and the team. Explain how and when they could be implemented. Most business owners would be thrilled to have a team willing to make changes happen. Taking a program together also helps when it comes time to implement new ideas and techniques. If the dentist still chooses not to do anything, the other team members will eventually adopt the attitude that "it's just a job," or may move to a progressive practice that offers more challenges.

Implementing Changes

How many times have you taken a continuing education program, thoroughly enjoyed it, and returned to work gungho to incorporate the ideas into your practice? How often did

you actually implement those ideas? People are afraid of change. Sometimes they don't realize that changes don't have to be dramatic. Small changes can make a big difference.

After a seminar, plan a short meeting with the entire staff, comment on the highlights of the program, and ask each team member to suggest one or two ideas that will improve the practice. Dentists often tell me the hard part in making changes is finding time to do everything. Delegate to your staff; hold them accountable.

Evaluating Your Staff and Practice

I find dentists do not take enough time to evaluate their team regularly. Evaluations don't have to be a negative experience. How can your team members meet your expectations if they don't know what those expectations are? Evaluations are a great opportunity to let your staff know what they are doing well and where they can improve. It is also a great opportunity to ask what motivates them and what courses they'd like to take to further their dental knowledge. You may have someone in your practice who is bored with assisting and who would enjoy the challenge of becoming a treatment coordinator. Your hygienist may want to spend more time educating the patients and using the computer simulation system to introduce a smile analysis. There is often a lot of untapped potential in dental offices.

Determine your training needs based on your evaluations. And remember — training takes time and requires organization. Plan training time each month, and put someone in charge of the training schedule. Stick to the training schedule. Who is it going to benefit? You and your practice. New skills learned by your staff can help improve efficiency, patient care and teamwork.

You also need to evaluate your practice. What sort of dentistry would you like to do? How are you marketing your services? Could you improve your patient education? Do you have the right staff? Do you need to review your computer system? Are you current with changes in dental benefits?

When you invest in training for yourself and your team, make sure you receive a return on that investment. If you are not willing to implement new ideas or techniques you learned through continuing education courses, what is the point of paying for these courses? The return on your investment can only come from you — learn, implement, encourage, and motivate. The opportunities are there. Are you willing to challenge yourself? ♦

Ms. Jupp is a dental consultant and international lecturer. She is also the director of the recently established ADEI (Advanced Dental Education Institute) for dental professionals.

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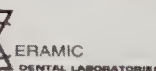
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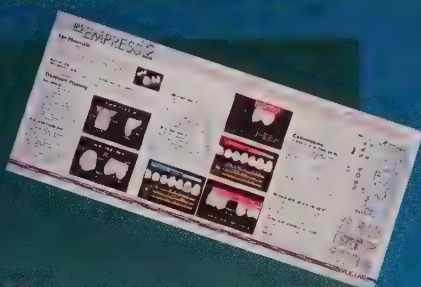
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Diagnostic Provisional Restorations in Restorative Dentistry: The Blueprint for Success

• Terry E. Donovan, DDS •
• George C. Cho, DDS •

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A famous prosthodontist once wrote, "When esthetics is the prime motivating factor in any restorative procedure, the restoration will assuredly fail."¹ While it is difficult to take issue with the intent of these words, it is certain that a significant number of elective restorative dental services are primarily esthetically driven. It is also certain that even when restorations are placed primarily for functional reasons, it is critical to address the patient's esthetic concerns.

In the authors' experience, the restorative dentist must clearly understand the esthetic expectations of the patient, and the patient must understand the inherent limitations of any type of restorative therapy. One often neglected modality at the clinician's disposal to aid in communication between the dentist and patient is the provisional restoration. These restorations can often be used before any irreversible treatment to preview potential esthetic outcomes and discover the limitations of specific restorative therapies. In other situations, provisional restorations can be placed and readily modified after tooth preparation but before fabrication of the definitive restoration. In these cases, the provisional can be modified until the patient is satisfied, and then the modified provisional restoration serves as the blueprint for the technician fabricating the definitive restoration.^{2,3}

This article discusses and illustrates how provisional restorations can be used diagnostically to meet the patient's esthetic expectations before the definitive restorations are fabricated. Techniques for transferring this critical information to the laboratory technician are also described.

Materials and Methods

Many materials and techniques can be used when fabricating provisional restorations. It is beyond the scope of this article to discuss these material and procedures. The technique generally followed by the authors is the indirect technique that has been adequately described in the literature.⁴⁻⁷ The material of choice for such restorations is poly (methyl-methacrylate) (Jet Acrylic Resin, Lang Dental Manf. Co., Chicago, IL), which is cured in a pressure pot (Acridense III, GC Dental, Scottsdale, AZ). Research has demonstrated that indirect provisional restorations are stronger and denser and have better marginal integrity than direct provisional restorations.⁸⁻¹¹ In

addition, when the indirect technique is used, the prepared tooth is not exposed to the exothermic reaction inherent with acrylic resin materials. Research has shown that sufficient heat is generated during the setting reaction to potentially result in irreversible pulpal damage.¹²⁻¹⁵

Numerous contemporary materials are available for fabricating acceptable provisional restorations with the direct technique (e.g., Iso-Temp, 3M Dental, St. Paul, MN; Temp-Phase, Kerr Corporation, Orange, CA). Many of these materials have multi-phasic setting reactions and are readily trimmed during a rubbery phase. These types of materials generally are used with conformative dentistry where significant changes in size, shape and general morphology of the teeth are not being considered. While these materials can certainly be very useful in certain aspects of clinical dentistry, they are inferior to the poly (methyl-methacrylate) materials for long-term diagnostic and esthetic provisional restorations.

The following basic approach is used when considering placement of esthetic restorations.

1. A thorough clinical and radiographic examination is completed along with a comprehensive medical and dental history.
2. The patient's chief complaint and esthetic expectations are determined during a detailed initial interview.
3. Impressions are made with irreversible hydrocolloid and the diagnostic casts mounted in an appropriate articulator using a facebow and an interocclusal record made in centric relation.
4. If indicated, a diagnostic wax-up is completed, and an impression of the wax-up is made with irreversible hydrocolloid. A cast of the wax-up is recovered from the impression.
5. Provisional restorations are fabricated using matrices from the cast to determine the morphology of the restorations. These provisional restorations are previewed in the patient's mouth and are adjusted to provide optimum lip support and the desired length, shape, colour and overall esthetic appearance. They are tested for phonetics using fricative and sibilant sounds, and finally are evaluated for comfort and function.



Fig. 1: This patient wanted the maxillary central incisors lengthened for esthetic reasons.



Fig. 2: Acrylic resin "shells" were fabricated from a cast of the diagnostic wax-up. They will be used to evaluate the length of the central incisors.



Fig. 3: The acrylic resin shells have been placed on the incisors before tooth preparation. After they have been adjusted for proper length, they aid in evaluating the optimum length for the lateral incisors. These will be lengthened with direct composite resin bonding.



Fig. 4: The maxillary central incisors have been prepared for porcelain laminate veneers; the shells have been relined and will serve as provisional restorations. The lateral incisors have been lengthened with direct composite resin.



Fig. 5: The porcelain laminate veneers have been luted to place. Note the excellent soft tissue response and the harmonious length relations of the central and lateral incisors and the canines.



Fig. 6: This patient presented with a 6-unit fixed partial denture with gingival recession around the crowns on the abutment teeth.



Fig. 7: The diagnostic wax-up deliberately created minor tooth rotations and different incisal edge positions in the hopes of creating a more natural appearance.



Fig. 8: This provisional restoration was made from a cast of the diagnostic wax-up illustrated in Fig. 7.



Fig. 9: This provisional restoration was made from a cast of the new diagnostic wax-up after trying in the original provisional restoration, which was unacceptable to the patient. The patient approved the esthetic result provided by the new provisional restoration, and the definitive restorations could be fabricated with confidence.



Fig. 10: The definitive restorations for the patient illustrated in Fig. 9 are very similar to the approved provisional restorations.

6. When the patient's esthetic and functional demands are satisfied, an impression is made of the acceptable provisional restorations and the recovered cast is sent to the laboratory to be used as a guide for the definitive restoration.

In certain clinical situations the provisional restorations can be used to indicate the final results without preparing the teeth. If the patient's esthetic demands cannot be met, neither the dentist nor the patient is committed to irreversible treatment. In other situations, the teeth must be prepared before fabricating the provisional restorations, which commits the patient to restoration. Nonetheless, it is always much easier to modify and alter acrylic resin restorations than to modify definitive restorations fabricated with metal, ceramic or metal-ceramic materials.

The following narratives and illustrations demonstrate the utility and flexibility of this approach.

Patient No. 1

This patient presented with moderate wear on the maxillary anterior incisor teeth (Fig. 1). He sought care primarily because he wanted to lengthen the central incisors for esthetic reasons. A diagnostic wax-up was completed on mounted casts, an impression was made of the wax-up, and a gypsum cast was recovered from the impression. Acrylic resin shells were made to try in the mouth (Fig. 2). When the shells were adjusted to the length preferred by the patient, it became apparent that the lateral incisors would need to be lengthened slightly to harmonize the appearance of the maxillary anterior teeth (Fig. 3). It was decided that the lateral incisors would be lengthened with direct bonded composite resin (Herculite XRV, Kerr Corporation, Orange, CA). The central incisors were prepared for porcelain laminate veneer restorations, and the lateral incisors were restored with direct composite resin.

The acrylic resin shells were then relined and luted to the central incisors as provisional restorations (Fig. 4).

One week later the porcelain laminate veneers were luted to the central incisors using a light curing composite resin luting agent (Opal Luting Composite, 3M Dental, St. Paul, MN). Figure 5 illustrates the completed restorations, with direct composite resin bonded to the incisal edges of the lateral incisors and porcelain laminate veneers on the central incisors. The key to predictability in this case was that the optimum length of the central incisors was determined in the patient's mouth using the acrylic resin shells. The shells were then used to help determine the length of the directly bonded lateral incisors, and the cast of the provisional restorations was used to guide the laboratory technician in fabricating the porcelain laminate veneers.

Patient No. 2

This patient presented with a fixed partial denture from the maxillary left canine to the right canine, with pontics replacing the two central incisors and the left lateral incisor. Gingival recession had occurred on all the abutment restorations, exposing the cervical margins of the abutment crowns. In addition to the esthetic deficiencies resulting from the recession, the incisal edges of the anterior teeth formed a relatively straight line, which resulted in a rather artificial appearance (Fig. 6). Diagnostic casts were mounted and a diagnostic wax-up completed (Fig. 7). This wax-up intentionally created minor tooth rotations and irregularities in incisal edge position to obtain a more natural appearance.

The fixed partial denture was removed, the abutment teeth were re-prepared, and a provisional restoration was fabricated from a cast of the diagnostic wax-up (Fig. 8). After intraoral evaluation, both the patient and the dentist agreed that the esthetics provided by the provisional restoration were less than optimum. A new wax-up was made taking into account the patient's wishes and comments, and a new provisional restoration was fabricated from a cast of the wax-up (Fig. 9). This provisional restoration more closely resembled the original fixed partial denture, and the patient was very pleased with the esthetic result, even though the appearance seemed somewhat artificial to the dentist's eye. An irreversible hydrocolloid impression of the cemented provisional restoration was made and the resultant cast sent to the laboratory technician along with appropriate directions for shade mapping and pontic design. The definitive restoration was fabricated using the provisional restoration as a blueprint (Fig. 10).

The key factor in attaining predictable success with this patient was the relative ease with which esthetics could be tested and modified with the provisional restoration. Once patient acceptance was obtained, the definitive restoration could be fabricated with confidence.

Summary and Conclusions

There is no question that patients today demand a sophisticated level of restorative dentistry, in terms of both esthetics and function. No elective restorative dentistry should be undertaken without a clear understanding of the patient's expectations and the limitations of restorative therapy. The dentist should have a clear picture in mind of the final results before initiating irreversible therapy. The use of mounted diag-

nostic casts, diagnostic wax-ups and provisional restorations permits patient acceptance to be obtained before the definitive phase is initiated. Too often the dentist does not take advantage of this important restorative option, with disastrous results when definitive restorations are viewed by the patient for the first time. By following the plan of treatment outlined in this article, such disasters can be avoided. ♦

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E-mail — Twenty Reasons Why You Should Have It in Your Dental Office

• Scott MacLean, B.Sc., DDS •

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Communications technology is changing and expanding at an unprecedented rate. Fifty years ago, many dentists did not have a telephone in their offices. They most certainly did not have a fax machine or a computer. Today, however, these communication tools are part of our daily routine, both in and out of the dental office. We don't need these devices to cut a Class I cavity or to perform a restoration, but they are useful when it comes time to take care of our business affairs.

One of the best "new" methods of communication is electronic mail, better known as e-mail. E-mail is a term used to describe mail that is sent from one computer to another via a computer network. With all the Internet hype going on these days, e-mail may seem like a new medium. Yet the first e-mail program was developed more than 27 years ago. Like conventional postal mail (better known now as snail mail), there is a sender and a receiver and a method for getting the message from point A to point B. The Canadian Press reports that there has been a 10% to 15% drop in the amount of letters mailed through Canada Post Corporation since electronic mail became popular (www.canoe.ca/TechArchive/990131_email.html).

Electronic mail is inexpensive and convenient. Most importantly, it represents a new communication standard for a growing number of patients and professional contacts. E-mail will not replace the telephone, but it can become a valuable business tool that will enhance your relationship with your patients.

How Does E-mail Work?

Most e-mail is sent using a specific address for both the sender and the receiver. The standard format uses a name and an address, joined by the "at" symbol (username@location). The user name describes the e-mail account holder and the location represents the computer company that is going to handle the mail. My e-mail address is maclean@ns.sympatico.ca. It tells people that my user name is "maclean" and that my mail will be handled by Sympatico in Nova Scotia, Canada. Sym-

patico is my Internet service provider. E-mail can be sent either through private networks or the Internet.

E-mail Features

E-mail is popular. In fact, e-mail is currently the most popular online activity. Nearly 50% of the U.S. population, or 135 million people, will communicate via e-mail by 2001 (<http://www.forrester.com> 1997). The 1997 Computer Industry Almanac predicts that the number of people with Internet e-mail access worldwide will grow 800% to 450 million in the next three years, up from 60 million today.

E-mail is economical. Once you have an e-mail account, you can usually send as many messages as you like for one monthly charge.

E-mail is reliable. E-mail will come back to you if it cannot be delivered. A message will appear on your screen indicating that the address is invalid. You can then go to sites like www.people.yahoo.com or www.whowhere.lycos.com to look up the correct e-mail address.

E-mail is accessible worldwide. You can send e-mail anywhere in the world. This is great if your kids are in university or travelling across Europe.

E-mail is convenient. You can retrieve your e-mail from any computer that has an Internet connection.

E-mail is safe. Passwords and user names keep e-mail private. For greater safety, you can use encryption to code your e-mail. Encryption scrambles the message before you send it, then unscrambles it when it gets to its destination. Many Canadian banks are currently using this technology to secure electronic transactions.

E-mail is fast. E-mail can reach its destination in seconds.

E-mail is smart. You can reply to an e-mail just by pushing one button. That's all you need to send your newly typed message back to the original sender.

Continued on page 294

Why Should You Have **E-mail** in Your Dental Office?

Dental software compatibility

Some dental software companies have integrated functions that allow you to send invoices and appointment reminders to your patients via the Internet. Say goodbye to stamps and to licking and stuffing envelopes!

Patient newsletters

Send your patients a monthly newsletter informing them of the new treatments you offer. Once you have created a mailing list, all you have to do is push one button to send the document to everyone. Either e-mail a generic text or use merge files to customize the document with personal information.

Staff memos

Many of your staff already have e-mail. You can create a list of their addresses to send one memo to all staff at once. Minutes of your meetings can easily be attached to e-mail.

Skip tracing

Since people don't necessarily change their e-mail address when they move, you may be able to find a patient who hasn't left a forwarding address through his or her e-mail account. Great for finding transients such as university students.

Long distance e-mail faxing

To help you save on long-distance charges, some Internet companies allow you to e-mail a letter to another city where they will then fax it locally.

Office signature files

Electronic letterhead can be created so that information such as your telephone and fax numbers, office address and hours, Web site address, and even brief dental health care notes, can be automatically added to every e-mail.

Post-operative instructions

Show your patients you care by e-mailing them standardized post-operative instructions. Or set up an "E-mail Autoresponder" or "Mailbot" that will automatically respond to a patient's electronic request for information, regardless of time or place. To find out more about mailbots, send a blank e-mail to faqmbot@nassist.com.

Patient information and treatment plans

Send your patients information about treatment plans or refer them to one of the many Internet sites on dental treatments.

Appointment reminders

E-mail is great for appointment reminders and confirmations.

Patient payments

Patients can use encryption e-mail to send credit card payments to your office for processing. Eventually, they will be able to pay with "cybercash" (<http://www.cybercash.com/>).

Communication with your dental association

Associations like to relay messages to their members in a suitable time frame. Your association can deliver an urgent message to your computer within seconds. Your opinions regarding important issues can get back to your association just as quickly.

Communication with other dentists

Discuss treatments and procedures with a dentist who is half-way across the world or in the next province. There are approximately 16,000 dentists in Canada alone.

Mailing lists

Join a mailing list to receive information on a particular topic of interest.

Savings

Time is money. E-mail can be a very efficient way to send and receive information.

Supplies and equipment

Many dental supply companies allow you to buy products over the Internet. You can also find out more about a product or piece of dental equipment you want to purchase on that company's Web site.

Prescriptions

In the near future, you will be able to send your prescriptions to the drugstore via a secure e-mail network.

Communication with your software company

No need to worry about time zones anymore. Send your software company an after-hours e-mail and have them call your office first thing the following business day.

Referrals to specialists

Items such as x-rays, videos, pictures and charts can be easily attached to e-mail and sent over the Internet to your dental specialists. The originals stay in your office.

Listserv access

A listserv is an automatic e-mailing program that sends messages back and forth like a two-way radio. Listservs are organized in topics such as dental amalgam, dentistry, oral pathology, etc. When you send a message to a listserv, it is forwarded to all its subscribers. For more information on Canadian dental listservs, try *Canaden Listserv* at <http://www.canaden.com> or *Atlantic Dental Listserv* at <http://www3.ns.sympatico.ca/maclea/adl.html>. A great site about listservs and mailing lists is located at <http://www.mindspring.com/~cmcleod/maillist.html>.

Patient interest

Many patients are excited about using this technology. They like the convenience and flexibility that e-mail offers.

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some of your own questions about your profitability, but may also point to some areas of inefficiency. This information may help you to increase the value of your practice and to operate more profitably in the future. Some dentists have told me that understanding their practice better is a benefit in itself.

The bottom line is, common sense makes business sense. Even Dr. Clapp knew that in 1916. ♦

Mr. Brown is the president of ROI Corporation. Since 1974, ROI has appraised over 2,000 dental practices and sold over 600.

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Primary Cleft Lip and Palate

• David S. Precious, DDS, M.Sc., FRCD(C) •

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Meaningful correction of the cleft lip can be achieved only when the surgeon fully appreciates both the normal and the pathological spatial relationships and functions of the anatomic elements, particularly the muscular elements, which cause the deformity (Fig. 1). The treatment goal is to obtain morpho-functional balance between the soft tissues and the skeleton, not only by re-establishing normal insertions of all the nasolabial muscles but also by restoring the normal positioning of all of the other soft tissues, including the mucocutaneous elements.

If, after primary surgery of the lip, oral-labial dysfunctions exist, they will exert their nefarious influences throughout a child's growth and will lead to long-term dento-facial imbalances, some of which can be considerable.¹ Thus, no matter what the initial esthetic result of the primary surgery, it is essential that the dentist conduct the most rigorous surveillance of operated patients to maintain an index of suspicion. The dentist will then be able to identify and correct any existing dysfunction as early as possible and by the most appropriate means.

Among the surgical means at our disposal are secondary functional cheilorhinoplasty, alveolar bone grafting, functional genioplasty and orthognathic surgery, the goals of which are to improve occlusion, nasal respiration, labial and labiomental function, and global facial harmony. This paper reviews some aspects of primary cleft surgery that will affect the future dental care of these young patients.

Primary Cleft Lip

Surgery should reconstruct both the form and the function of the divided face such that balanced growth of the facial skeleton can take place. A sound knowledge of the initial faults and their post-operative sequelae enables the clinician to adapt techniques according to the needs of each case.

The primary surgical procedure, performed when a child is 3 to 5 months old, is designed to systematically correct the abnormal anatomy. To correct the nasal deformity, the surgeon must obtain an ascension of the lower lateral cartilage with projection of the dome and an axial rotation of the lateral crus. In primary surgery, mucosal incisions must be short to prevent nostril constriction secondary to scar contraction, and for this reason the blind subcutaneous dissection must be both delicate and accurate. Muscle suturing is done in two planes: deep and superficial.

Once these fundamental relationships have been surgically created, their maintenance can be assured with the use of a silastic intranasal retainer, stabilized by stay sutures for the first week after surgery. After that week, the retainer can be removed, cleaned and replaced in the nose on a regular schedule for 10 to 12 months. The nasal retainer has proven to be very useful in maintaining anatomical corrections achieved through functional cheilorhinoplasty (Figs. 2a and 2b). In our experience, both nasal airway patency and nostril symmetry are improved through the use of the nasal retainer (Figs. 3a and 3b).

Primary Cleft Palate

There are three distinct regions of the mucoperiosteum covering the palate: (1) the palatine region — the thin, smooth lining covering the middle and posterior parts of the vault, corresponding roughly to the dimensions of the overlying nasal floor; (2) the maxillary region — the thick lining that covers the palate between the palatine and gingival regions, has rugae and is rich in blood vessels, nerves and connective tissue; and (3) the gingival region — the region that is intimately related to the maxillary dentoalveolus. It is the thick, maxillary mucoperiosteum, so important in the transverse and vertical growth of the palate, with which the surgeon must take special care in surgery of the hard palate.

In total bilateral cleft palate, the palatine part is missing but, usually, the gingival and maxillary regions are essentially normal. This explains why, in unoperated bilateral cleft palate, the development of the palatal vault is almost normal, the exceptions being the vomer and the palatine shelves themselves.

In classical palatorrhaphy techniques, large, widely undermined flaps of the maxillary region are swung medially to cover the defect of the palatine part. The resulting bilateral donor areas of exposed bone eventually undergo wound contraction and scarring. From its new position, the displaced maxillary mucoperiosteum cannot play its important role in transverse and vertical growth of the palatal vault. Furthermore, because this tissue is thick (unlike the thin palatine mucoperiosteum that is normally situated here), there is a "filling in" effect, which further compromises the depth of the palatal vault. The nasal fossae, normally under the influence of the palatine region of mucoperiosteum, do not fully develop their transverse dimension, which in turn can affect nasal airway patency.

It is also common in classic palatorrhaphy to obtain the nasal layer of the two-layer closure through the use of flaps of vomerine mucosa. This technique establishes an insufficient vertical dimension of the maxilla and therefore also of the nasal fossae, the net result of which favours a vertically deficient, retrodisplaced maxilla and overclosure of the mandible.²

In total unilateral cleft palate, the same problems exist with classic palatorrhaphy as in the bilateral case, except that because the vomer is bent to the non-cleft side, the transverse and vertical growth distortions are compounded by dysymmetry.

Staging of the surgical procedures based on variations of the individual case should be planned such that it is possible to respect the principles of anatomy and physiology of the three regions of mucoperiosteum that cover the palate. In complete cleft lip and palate, the soft palate is closed at the same time as the cleft lip at about 3 to 5 months of age (Fig. 4). The surgical goal is to establish both the continuity and the function of the muscles of the soft palate.

Adequate length of the soft palate can be achieved without either complex multiple Z-plasties or micro-surgical techniques. Incisions are made on the margins of the cleft of the soft palate, slightly favouring the nasal side. To obtain the best

exposure of the levator muscle, which is retracted toward the nasal side, a small triangle of mucosa is excised from the nasal surface of the divided velum on both sides. Reconstitution of the levator veli palati as well as the palatopharyngeus and palatoglossus muscles is prerequisite to obtaining adequate soft palate length. Adequate soft tissue mobilization can easily be realized by meticulous muscle dissection. The tensor palati and superficial portion of the palatopharyngeus muscles are freed from the posterior border of the palate so that their orientation from longitudinal to transverse can be accomplished. Muscle reconstruction, including the palatoglossus, establishes a functional sphincter of the soft palate. No vomer flap is employed.

Following closure of the soft palate and the cleft lip, there is function both anteriorly and posteriorly, which causes the distance between the hamular processes, tuberosities and divided hard palate to dramatically diminish by the time the child is about 12 months (Figs. 5a and 5b). The residual hard palate cleft can then be closed, very often without the use of lateral palatal incisions. Again, no vomer flap is used because the nasal side of the cleft is closed using nasal mucosa situated below the inferior border of the vomer.³

Isolated cleft palate, both hard and soft, is treated at about 9 months of age.⁴ The same fundamental principles are employed in revision surgery to obtain lengthening and improved function of the soft palate.

The Cleft Alveolus

Primary, early (within the first 18 months of life), autogenous bone grafting in reconstruction of clefts of the palate and alveolus has been demonstrated in most treatment centres to fall short of desired therapeutic results. Even when the technique used avoids disruption of vomerine mucosa, the quantity of bone present at the times of eruption of the maxillary permanent incisor and canine teeth is simply insufficient. It is generally agreed that these bone grafts do not preclude the need for early secondary alveolar bone grafts.

After conventional primary closure of a cleft lip there is inevitable scar tissue, oral nasal fistula, inadequate support for



Fig. 1: Unilateral complete cleft lip and palate in a 6-month-old baby.

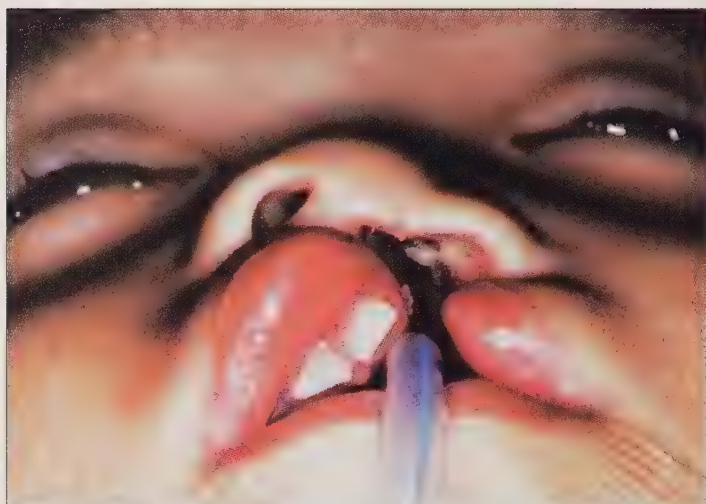


Fig. 2a: Primary lip-nose surgery, before operation.



Fig. 2b: Primary lip-nose surgery, after operation. Note nasal retainer in place.



Fig. 3a: Distorted anatomy before operation.



Fig. 3b: Normal anatomy restored and retained by accurate lip-nose muscle surgery.



Fig. 4: Soft palate muscular repair at the same time as primary lip surgery at 5 months of age.

the ala of the nose and absence of bone in the region of the future permanent lateral incisor and canine teeth. The goals of secondary alveolar bone grafting (performed at about 5 to 6 years of age) are:

- closure of vestibular and palatal oral nasal fistulae
- provision of bone of sufficient quantity and appropriate quality to allow eruption of the permanent lateral incisor (if present) and canine teeth
- provision of support for the lateral ala of the nose and the skeletal nasal base
- provision of suitable bony architecture of the premaxilla and the anterior face of the maxilla on the cleft side to support accurate nasolabial muscle reconstruction
- establishment of a functional nasal airway on the cleft side.

The success of secondary alveolar bone grafts is, to some extent, time dependent. If the bone graft is performed before eruption of the permanent canine tooth, the result is almost always successful.

The criteria of success are:

- the long-term preservation of alveolar bone stock
- the eruption and periodontal health of the permanent central incisor, lateral incisor and canine teeth
- an adequate width of attached gingiva in the region of the cleft
- the absence of exposed cementum on teeth adjacent to the cleft
- the absence of oral nasal fistula.

The graft material of choice is autogenous cancellous marrow of the ilium (iliac crest bone graft). This marrow is packed into the alveolar cleft defect, the soft tissue margins of which are concomitantly repaired surgically (Figs. 6a and 6b). These soft tissue margins are the palatal mucoperiosteum, the nasal mucosa and the attached and unattached buccal, vestibular gingiva.

The erupting tooth stimulates alveolar and graft bone growth, and, in the vast majority of cases in our clinical experience, the canine tooth spontaneously erupts through the graft to assume a functional final position in the maxillary dental arch.

If the bone graft is delayed until the child is 8 or 9 years of age, the maxillary central incisor will already have erupted (at approximately 6 years of age), which carries the risk of periodontal bone loss and root resorption. For this and other reasons, the most appropriate time to perform alveolar cleft bone grafting is when the child is about 5 to 6 years of age.

Alveolar bone is differentially responsive in such situations because it has a distinctive physiology, reflecting its separate developmental origin from the bone that constitutes the bulk of the mandible. Alveolar bone is derived from the dental primordium, the dental papilla; its affiliation is therefore with odontoblasts, which deposit dentin.⁵ Alveolar bone is much more dependent on mechanical stimuli for maintenance than is bone of the body of the mandible. When teeth are removed, alveolar bone is lost very rapidly; without the mechanical stimulation provided by tooth movement, alveolar bone



Fig. 5a: Wide cleft palate, before operation.



Fig. 5b: Wide cleft palate narrows after surgery sufficiently to allow closure of hard palate with no vomer flap.



Fig. 6a: Alveolar cleft defect.



Fig. 6b: Alveolar bone graft in place before soft tissue closure.



Fig. 7a: Clinical appearance before alveolar bone graft and lip-nose revision to close vestibular oral nasal fistula.



Fig. 7b: Completed result after bone graft, lip-nose surgery and orthodontic treatment.

cannot be maintained. Alveolar bone also turns over much more rapidly than does bone of the body of the mandible.

For unilateral clefts, we perform concomitant nasolabial muscle surgery to establish midline symmetry of the face, max-

illa, mandible and cranium. In bilateral cases, we perform the alveolar cleft grafts before orthodontic arch expansion; it is not prudent to perform concomitant nasolabial muscle surgery because of the risk of vascular compromise to the premaxilla.

Whether bilateral or unilateral, when appropriate grafting and soft tissue procedures accomplish almost normal anatomic reconstruction of the cleft defect (Figs. 7a and 7b), there is usually significant improvement in growth, function and esthetics. ♦

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The Resource Centre has several books and information packages on **cleft palate** and its treatment. We also have a variety of journals and textbooks to help readers learn more about the subjects covered in this issue of *JCDA*.

The CDA Resource Centre, supported in part by the Dentistry Canada Fund, offers several services, including Medline searches and interlibrary loans. For more information about our services, contact the Resource Centre staff at: 1-800-267-6354, ext. 2223, or e-mail us at: info@cda-adc.ca.

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BEAT THE PRESIDENT! Dr. Richard D. Sandilands, CDA President, hereby issues a challenge to all practising Canadian dentists to attempt to better his posted golf score during 1999.

For a tax-deductible fee of \$25, payable to the Dentistry Canada Fund, you can submit a signed and attested score card with your current handicap rating. Your net score will be used in the calculation. If you better Dick's score by five strokes or less, you will receive a silver certificate; if you better it by six strokes or more, you will receive a gold certificate. Both certificates are suitable for framing and will include the **I Beat the President** slogan.

The score to beat!

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Less Handicap	18
Net Score	76

R. D. Sandilands

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Preparing for Medical Emergencies in the Dental Office

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An emergency is a medical condition demanding immediate treatment. Emergencies do occur in dental offices: a survey of 4,000 dentists conducted by Fast and others¹ revealed an incidence of 7.5 emergencies per dentist over a 10-year period. Every dentist should have the basic knowledge to recognize, assess and manage a potentially life-threatening situation until the patient can be transported to a medical facility. Successful patient management relies on understanding the pathophysiologic processes and how to correct them.

Dealing with medical emergencies is not as difficult as most dentists expect. There is far less to know, for example, than what we have already learned and use every day in our practice. Keep in mind that some emergencies end in disaster even in hospitals where there is optimal management. People have heart attacks every day — they may just happen to be in your office at the time. Usually these tragic events happen through no fault of one's own; you just need to be prepared and know what to do to give the patient the best chance of recovery.

We are dealing here with the very basics of what keeps us alive — the ABCs, i.e., airway, breathing and circulation. Vital signs are key to assessing a patient in trouble. Respiratory rate, pulse and blood pressure are what need to be measured, nothing more sophisticated than that. If all these vital signs are normal, chances are the patient will be fine. If they are not, your goal is to normalize them until the patient can receive appropriate medical attention.

When assessing the respiratory system, look at the patient's chest and abdomen for excursive movements. In a patient where it is difficult to see movement, it may be easier to feel movement with your hand on the chest or abdomen. Pulse can be palpated for rate, rhythm and contour at any of the readily available arteries such as the radial in the wrist or the carotid in the neck. Remember that **blood pressure (BP) = cardiac output (CO) x peripheral resistance (PR)**. (CO = stroke volume [SV] x heart rate [HR]. Stroke volume refers to the volume of blood returned to the heart for pumping and the force of contraction by the heart as it pumps the blood out.) Most emergencies result in an alteration of this formula and your treatment objective is to correct the deviation. Blood pressure is usually checked in the upper arm using the brachial artery. All office personnel should know

how to take vital signs. If a patient has no arms, a large blood pressure cuff can be placed around the thigh using the popliteal artery at the back of the knee to auscultate for blood flow.

Education and Preparation

All members of the dental team, including the dentists, hygienists, assistants, receptionists or other office personnel, should have current CPR certification. Yearly refresher courses are recommended. The next level in training that dentists can receive is advanced cardiac life support (ACLS), which deals with advanced life-saving techniques such as intubation, defibrillation, IV access, emergency drug administration and recognition of cardiac dysrhythmias. Emergency room physicians, nurses and medical technicians use these techniques on a daily basis. Advanced trauma life support (ATLS) is a more intense course designed for individuals dealing with traumatized victims. While most oral and maxillofacial surgeons require this training, there is little need for other dentists to become ATLS-certified other than for general interest.

Reference material such as *Medical emergencies in the dental office*² should be kept handy.

As always, prevention is the best medicine. The Fast survey found that 28% of emergencies occurred during root canal therapy and 37% during extraction procedures.¹ These statistics suggest that fear, anxiety, pain or discomfort may predispose some patients to an emergency situation. If the dentist is able to alleviate the patient's concerns and use adequate pain-control techniques, then a major step has been taken in preventing an emergency.

Preparation for emergencies includes:

- training all members of the office staff in recognizing and managing life-threatening situations;
- developing a team approach with individual responsibilities;
- conducting simulated emergency events.

Your dental office staff should also be aware of the resources available (Table I).

Prevention of a medical emergency begins as soon as the patient enters your office and fills out the medical questionnaire. An accurate medical history is extremely important for

Table I Dental Office Emergency Resources

1. Emergency telephone numbers			
911			
ambulance			
physician			
oral and maxillofacial surgeon			
2. Emergency drugs			
a) injectable:		b) non-injectable:	
sympathomimetic	epinephrine (1 mg/ml)	oxygen	
antihistamine	Benadryl (50 mg/ml)	vasodilator	nitroglycerin (sublingual tablets or spray)
anticonvulsant	Versed (5 mg/ml)	bronchodilator	Ventolin
corticosteroid	dexamethasone (5 mg/ml)	aromatic ammonia	
antihypoglycemic	glucagon (1 mg/ml)	source of sugar	glucose gel, table sugar
	dextrose in water		
analgesic	morphine (10 mg/ml)	antiplatelet	ASA (325 mg tablets)
3. Emergency equipment			
oxygen delivery system (Ambu bag, nasal prongs)			
large bore suction tips			
needles and syringes			
oropharyngeal airway			
Chemstrips			

the dentist to identify any predisposing factors that could give rise to an unforeseen event. Remember — forewarned is forearmed. Although every dental office has its own medical questionnaire, there are six basic questions that should be asked to detect potential problems:

1. Do you have any allergies?
2. Is there a history of bleeding?
3. Do you have shortness of breath?
4. Do you have or have you had chest pains?
5. Are you taking any medication?
6. Have you previously been admitted to hospital?

A positive answer to any of these questions should be investigated to determine if treatment needs to be modified.

The next step in prevention occurs when you first see your patient. A visual inspection will allow you to detect any abnormal coloration of the skin or lips or shortness of breath, and will give you an overall impression of the patient's general health status. Talking to the patient will also give you an idea of his or her anxiety level and state of mind.

While performing your exam, record baseline vitals. This information is important in assessing the patient's overall

health and comparing the vital signs that are recorded during an emergency situation.

A constant review of physiology will be beneficial in helping you correctly interpret a patient's medical history and vital signs, and in relating the signs and symptoms to the patient's potential response to treatment. In the management of medical emergencies, it is important to remember the role of oxygen in maintaining the cell, the basic living unit of the body. In any emergency situation, your major concern should be how this event will affect the supply and/or demand for oxygen to each organ.

The entire body contains about 75 trillion cells. Although they perform different functions, they all have one thing in common: the need for oxygen as a substrate from which energy is derived. We need oxygen to produce energy units of ATP, which can then be used to both maintain cell membrane integrity and fuel cellular processes. If the cell doesn't have oxygen, it doesn't survive. For each specific emergency, the clinician must consider how treatment will favourably alter and improve the supply-demand equation for oxygen.

The body uses three systems that are integral to ensuring the oxygenation of all cells: the hematopoietic, the cardiovascular and the respiratory systems.

Blood consists of 40% cells; the remaining 60% is plasma. Ninety-nine per cent of the cells are red blood cells and one per cent are white blood cells. Hemoglobin in the red blood cells allows 30 to 100 times more oxygen to be transported as compared to simple dissolved oxygen in plasma. It is the loose, reversible combination of oxygen with hemoglobin that produces a bright red colour. Deoxygenated hemoglobin is bluish purple. When you examine a patient, note perfused areas such as the lips and nail beds for clues of how well the patient is being oxygenated.

To get oxygen to every cell, the body needs a pump and a circuit. The heart is the pump and the arterial and venous system is the circuit that carries blood away from and back to the heart, respectively.

When you record a patient's pulse and blood pressure, you gather a considerable amount of information about this system. A recorded blood pressure of 120/80 means the patient has a reading of 120 mm of mercury during systole, which is the period of contraction by the left ventricle. The reading of 80 mm of mercury occurs during diastole, the interval during which the left ventricle is relaxed and refilling with oxygenated blood. Remember that $BP = CO (SV \times HR) \times PR$; a change in any part of this equation will have a direct effect on increasing or decreasing the recorded value of the blood pressure. You can use patient management and positioning as well as pharmaceutical means to favourably alter the blood pressure. To quickly assess the cardiovascular system, feel the radial or carotid pulse to determine heart rate and stroke volume. There is a significant difference in managing a patient whose pulse is strong and regular, as opposed to a patient whose pulse is weak and irregular.

To get oxygen into the blood, the patient needs both ventilation and perfusion. Ventilation is the inflow and outflow of air between the atmosphere and lung alveoli, while perfusion is the flow of blood to the lung alveoli. If the flow of blood in the lungs is interrupted — as a result of a large blood clot or embolus, for example — then there may be insufficient oxygen getting into the blood even with adequate ventilation. Conversely, if the flow of air into the lungs is obstructed by a tooth, a rubber dam clamp or an acute asthmatic attack, then there may be insufficient oxygen getting into the blood even with adequate blood flow. It is important to remember the act of breathing is driven by the level of carbon dioxide in the blood. As this level increases secondary to cellular metabolism, our stimulus to breathe increases. Conditions affecting this stimulus can be the basis of management or, indeed, the cause of a medical emergency.

Emergency Team Structure

The dental office should have a working emergency plan in place and rehearse it at least once a year. Because of the variation in practices, every office needs to design its own emergency team structure. All emergency situations require a team leader — this structure is no different from the one adopted in emergency rooms where one person is designated to oversee the entire process of caring for the patient, giving all the orders

and directing people to do various tasks. In the dental office the team leader will probably have a more active role in assessing and treating the patient. The team leader is usually the dentist, but any number of more qualified individuals can assume the role, such as a cardiologist or a physician whose office is nearby. Make sure the individual whose help you solicit is current and knowledgeable about medical emergencies. Keep a contact number for this individual at the receptionist's desk along with other emergency numbers such as ambulance, emergency room or local hospital.

The team leader is person 1 (P1). The next most available person (P2), perhaps the assistant who is already in the room, will assist P1 directly, and can be responsible for vital signs, the application of oxygen, getting the emergency cart or whatever common sense dictates according to your team structure. The next available person (P3) will have the task of going down the hall for an emergency cart, preparing emergency drugs or whatever else P1 decides. The office receptionist plays a vital role and is given organizational tasks, including making all necessary phone calls, soliciting help and recording events. As in a hospital emergency department, this person is responsible for advising the team leader as to the time elapsed since any particular drug was given, for recording all vitals with corresponding time, and for charting all events and interventions. This information may seem of secondary importance during a life-threatening emergency, but it is very valuable in reviewing a patient's progress, especially once he or she gets to a hospital where emergency room physicians will need to know what was done and when so they can further manage the problem at hand.

Summary

If you discover an unconscious patient in your office, attend to the ABCs while you evaluate the patient's medical history and piece together the events leading up to the emergency. These actions will help you arrive at a diagnosis. Then as the emergency cart and team arrive, you will be able to provide good, safe care to stabilize the patient and get him or her to a medical facility. ♦

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Practical Issues in Delivering Geriatric Dental Care

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From 1963 to 1984 worldwide, the elderly visited the dentist less than any other age group.¹ The 1978-79 Canadian Health Survey showed that 67% of Canadian elderly had not visited a dentist in the previous five years.² A comparison of elderly Canadians with their American and British counterparts, over a one-year period, indicated the level of attendance in Canada (23%) was half that of the other two countries.³

However, studies also indicate that attitudes towards dentistry may be changing. Several authors have stated that as people age, a brighter picture may emerge as they:³⁻⁵

1. will be better educated than previous generations of older adults;
2. will have higher expectations about maintaining and preserving their natural dentition; and
3. will have the financial resources to fulfil their expectations.

Marketing Oral Health Care for Seniors

It is important for current providers of oral health care to understand aging in order to meet the needs of this population. There is a difference between the perceived needs and the professionally determined needs of the dentate elderly.⁶

Kay⁷ has suggested that different types of needs exist for the dental client (functional, psychosocial, perceived and normative) and that the profession should integrate these needs into a holistic approach, to demonstrate the benefits of dental care to the population as a whole. She warns that unless this approach is adopted, the true value of dental care will not be obvious, which could have a detrimental effect on funding for oral health care in a competitive health care environment.

Since the majority of elderly consumers avoid dental visits because they do not see a need for treatment,^{8,9} the dental profession must learn to successfully market its services to attract this patient base.

Strategies for Success

A mix of strategies can be used to effectively reach this population. First and foremost, dentists and the dental team should

provide a professional service that is sensitive and caring. The dental team should be cognizant of the life circumstances of these patients and tailor treatment plans accordingly.

Education

By participating in educational initiatives and subscribing to related journals, the dental team will greatly enhance its ability to effectively treat and manage the elderly. It is of utmost importance for dental professionals to be well-trained, understanding and compassionate, and to be aware of the special needs of the mature population.

The dental profession should seek interdisciplinary team training to better address these needs. Perhaps a geriatric resource centre or database on geriatric topics, available to all dental practitioners, should be created in Canada similar to the South Texas Geriatric Education Center, which serves as the National Repository for Geriatric Dentistry Educational Resources.¹⁰

Education in elderly care, however, must be supplemented with practical experience in the treatment of seniors, in various locations and using appropriate dental equipment. This fundamental change will require a number of initiatives, including changing the undergraduate curriculum in Canada, changing specialist training curricula, and providing adequate coverage of geriatric dentistry in continuing education courses.

Facilities

Office buildings should be accessible to the physically and mentally challenged, and private dental offices or dental departments should be designed for easy access. Some important factors to consider are:¹¹

- carefully selecting and placing signs to support the communicative independence of the elderly patient;
- using firm, standard-height chairs with arms for support;
- providing adequate lighting in each room, to minimize any visual disorientation or mental confusion; and
- setting up office furniture to promote and facilitate good communication and access.

In addition, the operatory should accommodate wheelchair patients or those who use walkers. In some cases, dentists might consider an operatory equipped to treat the patient in a wheelchair.

Media

Educational newsletters and material should be circulated. A number of business and appointment cards and brochures could be printed in extra-large type. Large-print leisure and educational material should be available in the reception room. Articles on geriatric dentistry could be placed in seniors' magazines and newspapers, and informative talks given to community groups to demonstrate a willingness and ability to treat medically compromised clients.

To improve access for senior adults, projects similar to the one undertaken by the Ottawa-Carleton Health Department, which has developed a senior-friendly dentists' booklet listing dentists and organizations willing to treat geriatric patients, could be initiated in large urban communities.¹²

Equipment

Portable dental equipment can be used to service the functionally dependent elderly at home or in nursing homes. This equipment varies from a domiciliary valise to a portable dental office, either housed in a van or set up in an available room in a nursing home. Investment will be governed by the amount of work available and the location of the service provided. For dentists wanting to supplement their practice by providing a domiciliary service, only a modest investment is necessary, but if a strategic move into geriatric treatment in nursing homes is envisaged, more complex and comprehensive equipment is necessary. Training and experience in the use of new portable equipment is clearly essential before embarking on such a service commitment.

Barriers to Dental Care

Barriers to dental care have been investigated in adult populations for several years.¹³ Recently, it was found that the importance of barriers varies according to various population segments. Penchansky and Thomas¹⁴ define these barriers as availability, accessibility, accommodation, affordability and acceptability.

Barriers to dental care occur for both the functionally independent individual and the functionally dependent person residing at home or in an institution. The main barrier is the perceived need for oral health care. Even though there is now a higher utilization of dental care,¹ those aged 65 and older are still least likely to use dental services (except for children under six).¹⁵ The majority of dentate and edentulous elderly believe they have no need for dental care until they develop pain or eating difficulties, or suffer from social embarrassment.^{16,17}

Institutionalized elderly have a higher normative need and a lower perceived need than less dependent groups.¹⁸

Additional barriers include the functional and medical status of the individual, transportation and accessibility difficulties, financial considerations, previous patterns of dental utilization, lack of education, and fear.^{19,20}

It is important, therefore, that education in geriatric dentistry include not only the practical, clinical aspects of treating the elderly, but the social, environmental, psychological, behavioural and financial aspects as well.

Dentists' attitudes toward the treatment of older patients can also create barriers. We must be aware that the time is fast approaching when the demand for geriatric care will far exceed the number of dentists currently willing and able to provide such care.

Attitude of Dental Professionals

Why is there a comparatively low utilization rate for dental care of the elderly despite the normative and perceived needs? Why has this market not been targeted? Why aren't graduating dental students more willing to fill this void?

Possible answers to these questions include:

- lack of experience and fear when treating geriatric problems;
- lack of financial incentives;
- transportation and access problems to the dental office;
- special problems that exist in providing dentistry to homebound and institutionalized patients;
- negative attitudes toward the elderly's need for dental care and their low perception and motivation for oral health care;
- the poor oral health status of the elderly, resulting in an edentulous state or teeth compromised by periodontal disease;
- difficulties dealing with debilitating and life-threatening illnesses;
- the problem of informed consent and of family members or residential facility staff members with negative attitudes.²¹

Dealing with the elderly requires an understanding of and a sensitivity to the medical, psychological and financial states of these patients. Our education system will have to change to address these emerging issues. The traditional educational and practice structures currently in place are based on serving the needs of a healthy and affluent population.²² An infrastructure that will allow these issues to be addressed will have to be created. Unlike the United States, where a number of programs are already in place, Canada has not yet responded to this lacuna in the education of both undergraduate and graduate students. It is important that we learn from these experiences to ensure the success of future strategic moves in dental education.

Conclusions

Outlining the issues in geriatric dentistry is not enough. As we prepare for the next millennium, we must find solutions to

We must be aware that the time is fast approaching when the demand for geriatric care will far exceed the number of dentists currently willing and able to provide such care.

the problems that exist today not just from a dental practice point of view, but also from an educational and political standpoint. As the population ages and an increasing proportion becomes institutionalized or homebound, there will likely be an increase in undertreatment of caries, periodontal disease, and partial and complete edentulousness. The threat exists for teeth that were carefully maintained throughout childhood and adulthood to be compromised due to diverse medical, behavioural and financial factors.

The burden of providing much of the dental care for the aging population rests with the private dental practitioner and those few practitioners who provide institutionalized care. An integrated approach is critical for the maintenance of an acceptable level of health for the institutionalized elderly. Coordinated medical support is vital, as is support from the various dental specialties. Communication with family and other health care professionals such as pharmacists, physiotherapists and caregivers is essential. An adequate number of trained and competent hygienists, dental assistants and administrators is also of paramount importance.

Lack of government funding means fewer dollars are available to provide dental care and training programs in geriatric care. Ideally, more extensive government policies should be implemented to allow reimbursement and delivery of oral health services to a functionally dependent elderly population unable to access oral health care services in the traditional manner. Universities must go beyond perfunctory references to geriatric concerns within both the undergraduate and graduate curricula and give this growing area of dental education and service the recognition it deserves by fully integrating geriatric dentistry into their programs.

Perhaps long-term care facilities affiliated with a university should become academic and resource centres promoting research and education in geriatrics.²³

The dental departments of these facilities may have to initiate their integration into the academic system, reach out to the community of older people to increase their level of perceived oral health care needs, and organize training and education programs for the dental team, dental students and caregivers working in institutions. Exposing students to such facilities would lend tremendous credibility to dental schools and enhance training programs as a result of the additional available resources.

Finally, these facilities could initiate the development of research programs in dental care for the elderly. Investigations are needed to determine various delivery options, specific treatment modalities and appropriate guidelines for care. Clinical trials of old and new dental materials are also needed to understand and demonstrate their effectiveness and to help understand the effects of aging on oral health. Perhaps the above strategies, together with improved advocacy for seniors, may help formulate policies that will lend financial support to this growing part of the population and allow the necessary delivery of oral health care services for the elderly. ♦

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When the Unthinkable Happens: Post-exposure Prophylaxis of HIV-Contaminated Percutaneous Injuries

• Trey L. Petty, BA, B.Sc., DDS •

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Health Canada's Laboratory Centre for Disease Control (LCDC), in cooperation with the U.S. Centers for Disease Control and Prevention (CDC), issues recommendations on a variety of health concerns for the general population and for health care settings. These recommendations typically relate in only a general way to dental offices, but some may be very pertinent to dental procedures. One such recommendation, which has been modified relatively recently, is the protocol for post-exposure prophylaxis (PEP) of percutaneous injury with *known* HIV-contaminated blood.¹ This change has been supported by the Canadian Medical Association and other agencies concerned with infection control and aseptic procedures in health care settings. The PEP protocol is altered from time to time following review of prospective, case-controlled studies of HIV seroconversion in health care workers after percutaneous exposure to HIV-contaminated blood. These studies are commonly known as the CDC Needlestick Study.^{2,3}

It is during extraoral procedures that most percutaneous injuries contaminated with the patient's blood or saliva occur.

The staff in dental offices that treat patients known to be living with HIV should be aware of this protocol, and the office policies should reflect these recommendations. Unfortunately, dental office staff tend to under-report when percutaneous injuries occur, particularly when there is potential contamination with HIV.⁴ Although the possibility of seroconversion following an HIV-contaminated percutaneous injury in a dental setting appears to be extremely unlikely,⁵ contaminated percutaneous injuries in dentistry do, unfortunately, occur. Most dental care workers appear to be very careful and focused during intraoral procedures, but it is during extraoral procedures, such as laboratory work, operatory clean-up and instrument preparation for sterilization, that most percutaneous injuries contaminated with the patient's blood or saliva occur.⁶

Cumulative data from Canada and the United States have shown that the average risk of acquiring an HIV infection after percutaneous exposure is only 0.3%.³ Although this number is

extremely low compared with other known risks in our modern life (such as driving a car), seroconversion in health care workers, including dental personnel, does still occur. Following the previous PEP recommendations, which used a single anti-retroviral agent, zidovudine (AZT; Retrovir), reduced this risk by as much as 79.0%.⁷

More current recommendations from CDC were introduced late in 1996 and are the basis for the Canadian Medical Association's recommendations.⁸ The current recommendations take into account the potential for greater protection through a combined drug protocol using anti-retroviral protease inhibitors, namely 3TC (lamivudine). Although the drug IDV (indinavir) is also part of the revised recommendations, its potential toxicity has limited recommendations for its use to massive blood exposures — for example, transfusion with HIV-contaminated blood. Thus, the use of and familiarity with this drug is not necessary in most dental settings.

The recommended protocol for percutaneous injury with *known* HIV contaminated blood is as follows:

Immediately following an exposure injury, induce bleeding from the wound by squeezing the injury site and holding it under warm, running water. Thoroughly wash the wound several times with an appropriate anti-microbial handwash solution (see the Canadian Dental Association's *Workbook on Infection Control*⁹ for more information). Primary closure of the wound, if necessary, should be performed.

Take the injured person immediately to an appropriate medical facility for post-exposure assessment. This assessment takes into account the nature of the exposure, the likelihood of HIV infection in the source patient and, in cases of known infection, the HIV titre and likelihood of drug resistance (if known). Appropriate counselling by trained medical personnel familiar with dealing with HIV exposure is vital.

Expediency in administering the anti-retroviral medications is crucial to success in preventing HIV seroconversion.

The risk of infection should be weighed against the potential toxicity of the anti-retroviral drugs, but when appropriate, chemoprophylaxis must be started **within one to two hours** after the exposure and should continue for four weeks.

The recommended chemoprophylaxis is AZT 200 mg three times daily for four weeks and 3TC 150 mg twice daily for four weeks. These drugs may cause gastrointestinal symptoms (nausea, vomiting, diarrhea), fatigue, peripheral neuropathy, anemia and headache. Some of these side-effects may become debilitating while the drugs are being taken. The safety of 3TC during pregnancy has not been established.

An unfortunate reality of health care restructuring in Canada is that delays in emergency care may occur. Such delays may occur even in emergency rooms in major trauma centres where sensitization to dealing with such a health care crisis should exist. Staff from the author's dental clinic who have received known HIV-contaminated injuries have encountered delays of several hours in getting appropriate counselling and chemoprophylaxis in the emergency department of the dental clinic's own hospital, despite the author's impassioned demands for care.

Dental offices should check with their local health units or hospitals to ensure that injured personnel will be attended to **immediately** upon presentation and that the appropriate chemoprophylactic drugs are on hand for immediate administration, should they be necessary. Dental offices that treat several patients known to be living with HIV may wish to consider having at least one or two doses of these medications in their emergency drug kit, so that delays in medical attention are not a factor.

Percutaneous exposure to blood-borne pathogens such as HIV is a hazard every clinical practitioner in dentistry faces. By being properly forearmed with the necessary knowledge and protocol, practitioners can reduce the risk of seroconversion for themselves and their staff to as low as reasonably possible. Practitioners have a demanding enough practice without having to worry about the "terror factor"¹⁰ of what to do if and whenever this unfortunate event occurs. ♦

Dr. Petty is division chief, oral medicine, Foothills Medical Centre; director, oral medicine and surgery, Tom Baker Cancer Centre; associate professor, faculty of medicine, University of Calgary.

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The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

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*E-mail — 20 Reasons Why You Should Have it in Your Dental Office
Continued from page 276*

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Dr. MacLean is a general dentist practising in Halifax, Nova Scotia.

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The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

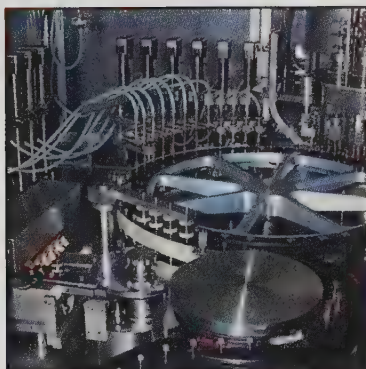
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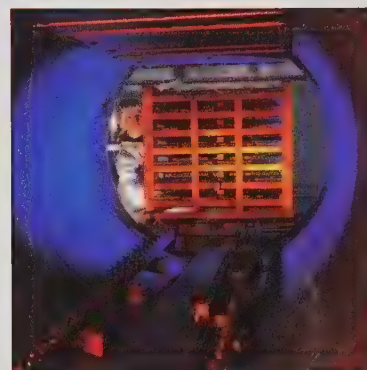
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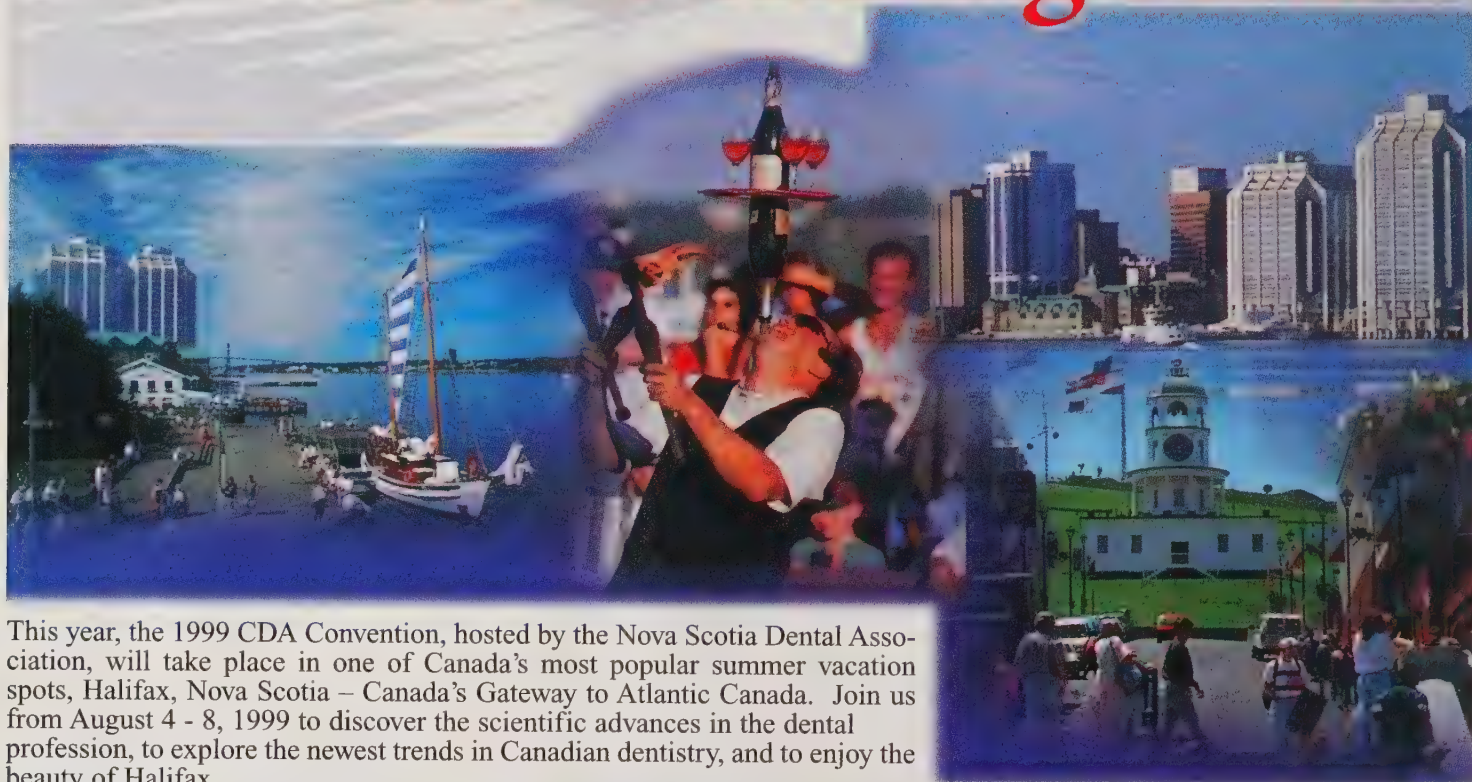


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INDICATIONS AND CLINICAL USE ASTRACAIN (articaine hydrochloride) is indicated for infiltration anesthesia and nerve block anesthesia in clinical dentistry. **CONTRAINDICATIONS** Articaine hydrochloride is contraindicated in patients with a known hypersensitivity to local anesthetics of the amide type. As with all vasoconstrictors, epinephrine is contraindicated in hypertension, thyrotoxicosis, or severe heart disease, particularly when tachycardia is present. Local anesthetics should not be used in severe shock or heart block. They should also not be used when there is inflammation or sepsis in the region of the proposed injection.

WARNINGS RESUSCITATIVE EQUIPMENT AND DRUGS SHOULD BE IMMEDIATELY AVAILABLE WHEN ANY LOCAL ANESTHETIC IS USED. As with other local anesthetics, articaine hydrochloride is capable of producing methemoglobinemia. This has been observed with epidural anesthesia, but not when used as directed in dental procedures. Methemoglobinemia values of less than 20% usually do not produce any clinical symptoms. The usual clinical signs of methemoglobinemia are cyanosis of the nail beds and lips. Although the possibility of methemoglobinemia occurring in dental patients is extremely rare it can be rapidly reversed by the use of 1-2 mg/kg body weight of methylene blue administered intravenously over a 5-minute period. Because ASTRACAIN contains a vasoconstrictor, it should be used with extreme caution in patients receiving drugs known to produce blood pressure alterations (for example MAO inhibitors, tricyclic antidepressants, phenothiazines), as either severe and sustained hypotension or hypertension may occur. **PRECAUTIONS** General The safety and effectiveness of local anesthetics depend upon proper dosage, correct technique, adequate precautions and readiness for emergencies. THE LOWEST DOSE THAT RESULTS IN EFFECTIVE ANESTHESIA SHOULD BE USED TO AVOID HIGH PLASMA LEVELS AND SERIOUS UNDESIRABLE ADVERSE EFFECTS. INJECTIONS SHOULD BE MADE SLOWLY, WITH FREQUENT ASPIRATIONS BEFORE AND DURING THE INJECTION. If blood is aspirated, the needle should be relocated. Tolerance varies with the status of the patient. Debilitated or elderly patients, acutely ill patients, and children should be given reduced doses commensurate with their age and physical status. **Use in Pregnancy** Safe use of articaine hydrochloride in pregnant women has not been established, however, animal studies have not demonstrated teratogenic or embryotoxic effects. **Nursing Mothers** Articaine hydrochloride is rapidly metabolized and eliminated and is therefore unlikely to be transferred to the mother's milk. **Patients with Special Diseases and Conditions** ASTRACAIN contains a vasoconstrictor and should therefore be used with caution in the presence of diseases which may adversely affect the patient's cardiovascular system. The drug should be used with caution in persons with known drug sensitivities. ASTRACAIN contains sodium metabisulfite. Sulfates may cause allergic reactions in susceptible people. The prevalence of sulfite sensitivity in the general population is unknown and probably low, but it is seen more frequently in patients with bronchial asthma. Reactions can include anaphylactic symptoms and life-threatening or less severe asthmatic episodes. Many drugs used during the conduct of anesthesia are considered potential triggering agents for familial malignant hyperthermia. It has been shown that the use of amide local anesthetics in malignant hyperthermia patients is safe. However, there is no guarantee that neural blockade will prevent the development of malignant hyperthermia during surgery. It is also difficult to predict the need for supplemental general anesthesia. Therefore, a standard protocol for the management of malignant hyperthermia should be available. **Drug Interactions** Serious cardiac arrhythmias may occur if preparations containing a vasoconstrictor are employed in patients during or following the administration of chloroform, halothane, cyclopropane, trichloro-ethylene or other related agents. Caution should be exercised when administering articaine hydrochloride concomitantly with other medications which are potential producers of methemoglobin (e.g. sulphonamides). **ADVERSE REACTIONS** Reactions to ASTRACAIN (articaine hydrochloride) are characteristic of those associated with amide-type local anesthetics. Adverse reactions may result from high plasma levels due to excessive dosage, rapid absorption or inadvertent intravascular injection, or may result from a hypersensitivity, idiosyncrasy or diminished tolerance on the part of the patient. Such reactions are systemic in nature and involve the central nervous system and/or the cardiovascular system. **Central Nervous System** CNS manifestations are excitatory and/or depressant, and may be characterized by nervousness, dizziness, blurred vision and tremors, followed by drowsiness, convulsions, unconsciousness and possibly respiratory arrest. The excitatory reactions may be very brief or may not occur at all, in which case, the first manifestations of toxicity may be drowsiness, merging into unconsciousness and respiratory arrest. **Cardiovascular System** Cardiovascular reactions are depressant, and may be characterized by hypotension, myocardial depression, bradycardia and possibly cardiac arrest.

Allergic Allergic reactions are characterized by cutaneous lesions, urticaria, edema or anaphylactoid reactions. The detection of sensitivity by skin testing is of doubtful value. Swelling and persistent paresthesia of the lips and oral tissues have been reported after blocking the inferior alveolar nerve. **FOR SYMPTOMS AND TREATMENT OF OVERDOSAGE** PLEASE REFER TO THE PRODUCT MONOGRAPH. **DOSEAGE AND ADMINISTRATION** As with all local anesthetics, the dosage varies and depends upon the area to be anesthetized, the vascularity of the tissues, the number of neuronal segments to be blocked, individual tolerance and the technique of anesthesia. The lowest dosage needed to provide effective anesthesia should be administered.

Procedure	ASTRACAIN 4% FORTE and ASTRACAIN 4%	
	Volume (mL)	Total Dose (mg)
infiltration	0.5-2.5	20-100
nerve block	0.5-3.6	20-144
oral surgery	1.0-5.4	40-216

Adults It is recommended that the dosage should not exceed 7 mg/kg body weight in adults and in general the maximum total dose should not exceed 500 mg (12.5 mL or 7 cartridges). **Children** Dosages in children should be reduced commensurate with their age and weight. Experience in children younger than 4 years of age has not been documented. The dosage should not exceed 5 mg/kg body weight in children between the ages of 4 and 12. **Stability and Storage Recommendations** Store at controlled room temperature (15-30°C). Protect from light. Do not use if solution is pinkish or darker than slightly yellow or if it contains a precipitate. ASTRACAIN solutions are without preservative and are for single use only. Discard unused portion. **AVAILABILITY OF DOSE FORMS** ASTRACAIN 4% FORTE (articaine hydrochloride 40 mg/mL and epinephrine injection 1:100,000) and ASTRACAIN 4% (articaine hydrochloride 40 mg/mL and epinephrine injection 1:200,000) are available in dental cartridges of 1.8 mL in boxes of 50. Product Monograph available upon request.

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Antibiotic

Action - Clindamycin exerts its antibacterial effect by causing cessation of protein synthesis and also causing a reduction in the rate of synthesis of nucleic acids.

INDICATIONS - Dalacin® C (clindamycin hydrochloride) is indicated in the treatment of serious infections due to sensitive anaerobic bacteria, such as bacteroides species, peptostreptococcus, anaerobic streptococci, clostridium species and microaerophilic streptococci.

Dalacin® C is also indicated in serious infections due to sensitive gram-positive organisms (staphylococci, including penicillinase-producing staphylococci, streptococci and pneumococci) when the patient is intolerant of, or the organism resistant to other appropriate antibiotics.

Dalacin® C is indicated for the treatment of the *Pneumocystis carinii* pneumonia in patients with AIDS. Clindamycin in combination with primaquine may be used in patients who are intolerant to, or fail to respond to conventional therapy.

Dalacin® C is indicated for prophylaxis against alpha-hemolytic (viridans group) Streptococci before dental, oral and upper respiratory tract surgery.

- a) The prophylaxis of bacterial endocarditis in patients allergic to penicillin with any of the following conditions: congenital cardiac malformations, rheumatic and other acquired valvular dysfunction, prosthetic heart valves, previous history of bacterial endocarditis, hypertrophic cardiomyopathy, surgically constructed systemic-pulmonary shunts, mitral valve prolapse with valvular regurgitation or mitral valve prolapse without regurgitation but associated with thickening and/or redundancy of the valve leaflets.
- b) Patients taking oral penicillin for prevention or recurrence of rheumatic fever should be given another agent such as clindamycin, for prevention of bacterial endocarditis.

CONTRAINDICATIONS - As with all drugs, the use of Dalacin® C (clindamycin hydrochloride) is contraindicated in patients previously found to be hypersensitive to this compound. Although cross-sensitization with Lincocin® (lincomycin hydrochloride) has not been demonstrated, it is recommended that Dalacin® C not be used in patients who have demonstrated lincomycin sensitivity.

Until further clinical experience is obtained Dalacin® C is not indicated in the newborn (infants below 30 days of age), or in pregnant women.

WARNINGS - Some cases of severe and persistent diarrhea have been reported during or after therapy with Dalacin® C (clindamycin hydrochloride). This diarrhea has been occasionally associated with blood and mucus in the stools and has at times resulted in acute colitis. When endoscopy has been performed, some of these cases have shown pseudomembrane formation.

If significant diarrhea occurs during therapy, this drug should be discontinued or, if necessary, continued only with close observation. Significant diarrhea occurring up to several weeks post-therapy should be managed as if antibiotic-associated.

If colitis is suspected, endoscopy is recommended. Mild cases showing minimal mucosal changes may respond to simple drug discontinuance. Moderate to severe cases, including those showing ulceration or pseudo membrane formation should be managed with fluid, electrolyte, and protein supplementation as indicated. Corticoid retention enemas and systemic corticoids may be of help in persistent cases, anticholinergic and antiperistaltic agents may worsen the condition. Other causes of colitis should be considered.

Studies indicate a toxin(s) produced by Clostridia (especially Clostridium difficile) may be a principal cause of clindamycin and other antibiotic-associated colitis. These studies also indicate that this toxigenic Clostridium is usually sensitive in vitro to vancomycin. When 125 mg to 500 mg of vancomycin were administered orally four times a day for 5 - 10 or more days, there was a rapid observed disappearance of the toxin from fecal samples and a coincidental recovery from the diarrhea.

It should be noted that serious relapses have occurred up to one month after apparently successful treatment. A relatively prolonged period of continuing observation is therefore recommended.

In patients with G-6-PD deficiency, the combination of clindamycin with primaquine may cause hemolytic reactions; reference should also be made to the primaquine product monograph for other possible risk groups for other hematologic reactions.

PRECAUTIONS - Dalacin® C (clindamycin hydrochloride) like any drug, should be prescribed with caution in atopic individuals.

The use of antibiotics occasionally results in overgrowth of non-susceptible organisms particularly yeasts. Should super-infections occur, appropriate measures should be taken as dictated by the clinical situation.

As with all antibiotics, perform culture and sensitivity studies in conjunction with drug therapy.

Since abnormalities of liver function tests have been noted occasionally in animals and man, periodic liver function tests should be performed during prolonged therapy. Blood counts should also be monitored during extended therapy.

Routine blood examinations should be done during therapy with primaquine to monitor potential hematologic toxicities.

Dalacin® C may be used in anuric patients. Since the serum half-life of clindamycin in patients with impaired hepatic function is greater than that found in normal patients, the dose of Dalacin® C should be appropriately decreased. Hemodialysis and peritoneal dialysis are not effective means of removing the compound from the blood. Periodic serum levels should be determined in patients with severe hepatic and renal insufficiency.

ADVERSE REACTIONS - Only 65 of the 851 patients treated for infections developed side effects representing 7.6% of the total study group or 8.0% of the 813 patients with follow-up. Only 22 of these patients' symptoms were considered due to Dalacin® C (clindamycin hydrochloride) for an incidence of 2.7% among the 813 cases with follow-up.

Gastrointestinal - Abdominal pain occurred in 12 patients for an overall incidence of 1.4% in 851 patients and was considered drug related in 7 (0.8%).

Diarrhea occurred in 22 cases for an overall incidence of 2.6% and was drug related in 13 (1.5%). Vomiting occurred in 14 cases with an overall incidence of 1.6%. Seven patients (0.8%) had nausea which was drug related in 2 cases (0.2%). Side effects were severe in 10 instances. (See also under "WARNINGS"). Esophagitis, at times severe, has been reported.

Hemopoietic - Transient neutropenia (leukopenia) has been reported. Its relationship to therapy is unknown. No irreversible hematologic toxicity has been reported. However, in clindamycin/primaquine combination studies, serious hematologic toxicities (grade III, grade IV neutropenia or anemia, platelet counts < 50 X 10⁹/L, or methemoglobin levels of 15% or greater) have been observed.

Skin and Mucous Membranes - Skin rashes have been reported in 6 patients (0.7%), none of which could be determined as drug related. One case of urticaria was reported but its relationship to drug therapy could not be determined.

Liver - Although no direct relationship of Dalacin® C to liver dysfunction has been noted, transient abnormalities in liver function tests (elevations of alkaline phosphatase and serum transaminase) have been observed in a few instances.

SYMPTOMS AND TREATMENT OF OVERDOSAGE - No cases of overdosage have been reported. It would be expected however, that should overdosage occur, gastrointestinal side effects including abdominal pain, nausea, vomiting and diarrhea might be seen. During clinical trials one 3-year old child was given 100 mg/kg of Dalacin® C (clindamycin hydrochloride) for five days and showed mild abdominal pain and diarrhea. One 13-year old patient was given 75 mg/kg for five days with no side effects. In both cases laboratory values remained normal.

Overdosage should be treated with simple gastric lavage. No specific antidote is known.

DOSAGE AND ADMINISTRATION

Adults:	150 mg every 6 hours.
Moderately severe infections:	300 mg every 6 hours.
Severe infections:	450 mg every 6 hours.

Children (over one month of age):

One of the following two dosage ranges should be selected depending on the severity of the infection:

1. 8-16 mg/kg/day (4-8 mg /lb/day) divided into 3 or 4 equal doses.
2. 16-20 mg/kg/day (8-10 mg/lb/day) divided into 3 or 4 equal doses.

Pneumocystis carinii pneumonia in patients with AIDS:

Dalacin C (clindamycin hydrochloride) 300-450 mg may be given orally every 6 hours in combination with 15-30 mg of primaquine for 21 days. Alternatively, DALACIN C PHOSPHATE (clindamycin phosphate) 600-900 mg (IV) may be given every 6 hours or 900 mg (IV) every 8 hours in combination with oral daily dose of 15-30 mg of primaquine. If patients should develop serious hematologic adverse effects, reducing the dosage regimen of primaquine and/or DALACIN C capsule should be considered.

Absorption of Dalacin® C (clindamycin hydrochloride) is not appreciably modified by ingestion of food and may be taken with meals.

To avoid the possibility of esophageal irritation, Dalacin® C capsules should be taken with a full glass of water.

For prevention of endocarditis: Adults: 300 mg orally 1 hour before procedure; then 150 mg 6 hours after initial dose. Children: 10 mg/kg (not to exceed adult dose) orally 1 hour before procedure; then 5 mg/kg 6 hours after initial dose.

Note: With β -hemolytic streptococcal infections, treatment should continue for at least 10 days to diminish the likelihood of subsequent rheumatic fever or glomerulonephritis.

AVAILABILITY OF DOSAGE FORMS

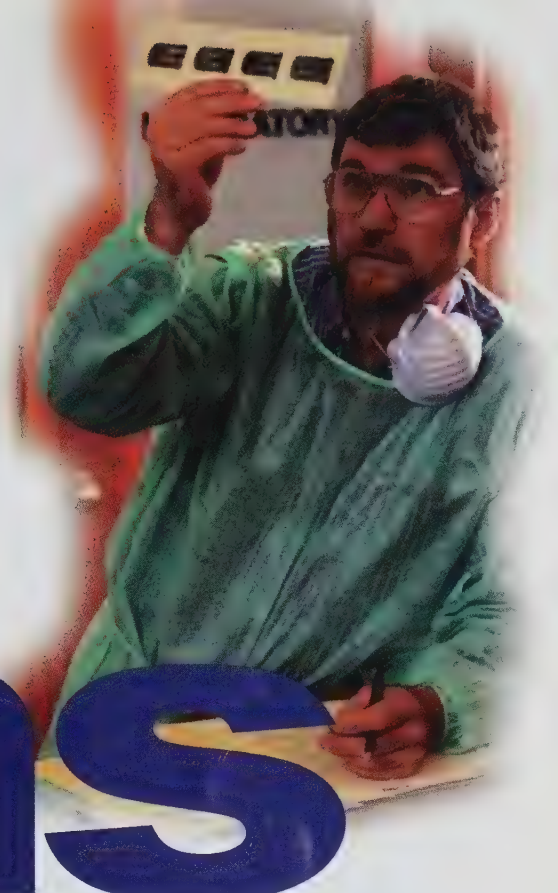
Each capsule contains clindamycin hydrochloride hydrate equivalent to 150 mg or 300 mg clindamycin base. Supplied in bottles of 100 and 500 capsules.

Product monograph available upon request.



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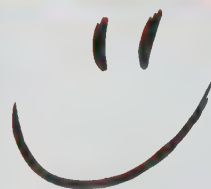
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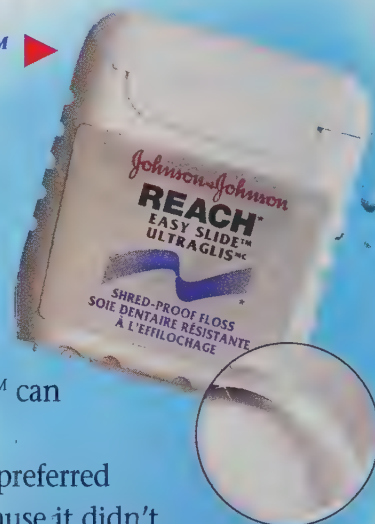
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Journal of the Canadian Dental Association

June 1999

V/AIDS and tion Control Practices in Dentistry

Vital Pulp Capping: A Worthwhile Procedure

Antibiotics for the Millennium Bug

Irradiated Polyglactin 910 Vicryl Rapide Suture in Oral and Scalp Wounds



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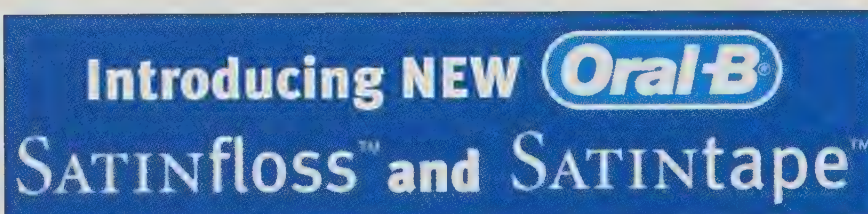
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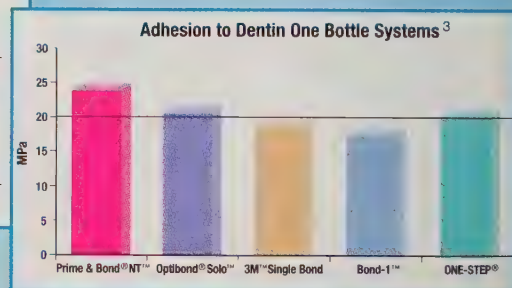
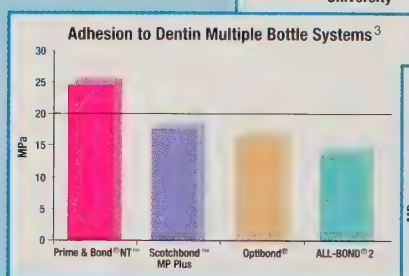
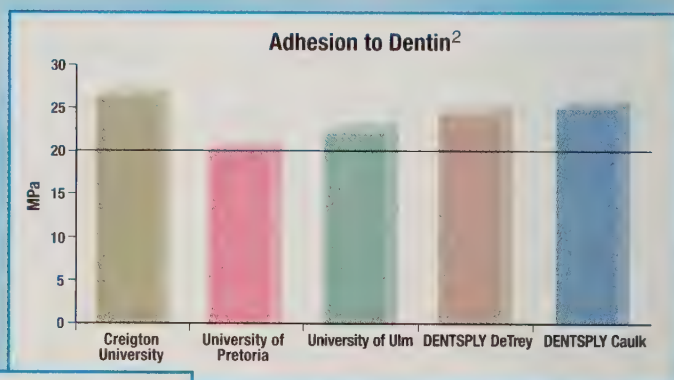


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Editorial

I KNOW WHERE I STAND!



Dr. John P. O'Keefe

On September 24 last year, I got phone calls from two Ottawa dentists angry about a lecture they had attended the previous evening. The lecture in question had been delivered by Dr. John Hardie at the Ottawa Hospital.

My callers were upset by Dr. Hardie's messages about the lack of need for universal infection control measures in dental practice, and his beliefs about the etiology of AIDS. According to my informants, approximately 200 people had attended the lecture, which was one of a series of at least three talks given by Dr. Hardie in various Canadian cities last fall.

One of the dentists mentioned during our conversation that a young public health physician in the audience had challenged Dr. Hardie on many of the points he had raised during his lecture. I spoke with that physician, Dr. Sam Nutt of the Ottawa-Carleton health department, later that day and discussed

the idea of submitting a debate article on this topic to the *Journal*.

When Dr. Nutt and her colleagues submitted the article that appears in this edition of the *Journal*, I felt a responsibility to allow Dr. Hardie the right to reply. I sent Dr. Hardie a copy of the piece and invited him to respond in an article of the same length. Dr. Hardie's reply also appears in this issue. Fairness dictates that different viewpoints get aired.

The arguments on both sides of this debate are very important to all members of the dental team, their families and their patients. Dr. Hardie believes that we are taking unjustifiable measures to prevent the transmission of blood-borne diseases in dental practice. Dr. Nutt and her colleagues believe that dentists and their staff have an ethical and legal responsibility to use universal precautions against the spread of infectious diseases in dental practice.

Since the mid 1980s, I have practised dentistry using universal infection control precautions. The AIDS epidemic that surfaced around that time shocked me and the vast majority of dentists out of old habits. When I entered practice in 1981, I scarcely ever wore gloves, unless a patient had a herpetic lesion. I seldom wore a mask and I always wore my street clothes into the surgery.

How times have changed! I now wear scrubs in the operatory and would never dream of not donning gloves and a mask when treating a patient. I am conscious of infection control measures every minute I am in the clinic. I am also aware, however, that there are many weak links in the "chain" of infection control measures in dental practice. We may not be able to create an environment as sterile as a hospital operating room, but we have a responsibility to do our very best. Why? Because our patients are watching our infection control protocols like hawks.

This public interest in infection control was brought home very clearly to me by two patients in my clinic recently. In the first incident, I was about to examine an elderly lady who was accompanied to the surgery by her son. Just as I was going to insert the mirror in the lady's mouth, the son jumped out of his chair and grabbed my mirror, asking me in a very agitated voice if it was sterile. I was totally taken aback and replied spontaneously that it had been until he had touched it. I then realized what had got him upset — there were ring-like stains on the mirror that had been created by droplets of water remaining on its surface during the autoclave cycle. All the science in the world was not going to convince that man that I was not putting a dirty instrument in his mother's mouth. I certainly learned a lesson!

Later the same day, a patient whose medical history I was reviewing asked me if I treated a lot of AIDS patients. I replied that I treated whoever presented to me. My patient weighed this information and said something like "Well I just have hepatitis C; that shouldn't really be a problem, should it?" Interestingly, he hadn't written anything about this condition in his medical questionnaire. I was very happy to be able to reply that his condition didn't pose a problem because I used universal precautions.

I regularly treat people in the high-risk groups for infectious diseases — intravenous drug users, prostitutes, homosexuals, people from areas of the world where hepatitis B is endemic. I believe it is my professional responsibility to care for these patients to the best of my ability, notwithstanding their elevated risk for health problems. Even if universal precautions are not perfect, I would hate to face my wife if I did not follow these measures.

John O'Keefe
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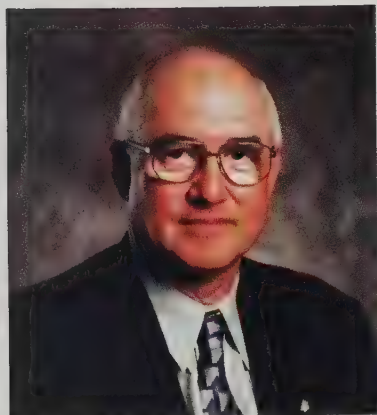
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President's Column

DEALING WITH STUDENT EDUCATION



Dr. Richard D. Sandilands

Over the course of my term as president of the Canadian Dental Association, I have had the opportunity to talk with many young dentists and dental students across the country. Almost universally, they have expressed concerns about the growing debt load they carry as they progress through dental school. Their concerns are heightened by anticipated tuition fee increases in almost every Canadian dental faculty over the next few years. In one letter, a recent graduate expressed concern about the prohibitive nature of these increases, noting that in the not-too-distant future, only the very wealthy will be able to afford an education in dentistry. This young dentist also pointed out that the profession itself seems unconcerned about the rising cost of dental education, preferring to let universities deal with this important issue.

These dentists and students make some very important points regarding dental education and the availability of

funding. Although statistics on this subject are difficult to obtain from the universities (not to mention the dental schools), it is estimated that the overall cost of providing a four-year dental education program in Canada is quickly approaching \$150,000. The cost of this education — minus the share paid by students through tuition fees — is totally borne by the provincial education systems and, by extension, the universities funding their faculties of dentistry. Dentistry is the only professional program where this occurs.

In comparison, the total cost of educating a medical doctor in a Canadian university is at least as high, if not higher, than the cost of educating a dentist. However, the cost of training a medical student is carried jointly, after either the first or second year, by the university and the health care system! Students in medicine, nursing, physiotherapy and occupational therapy are used to provide manpower in hospitals while they are learning. As a result, the health care system picks up the lion's share of the cost of training these individuals. There is an argument to be made for the contribution of low-cost labour to the health care system, but the fact remains that there are additional, invisible costs associated with this approach that are not always identified, such as time spent by hospital staff (physicians) supervising medical students and the accumulated costs of having inexperienced students or residents ordering laboratory tests, medications, and other diagnostic services.

There is no way for dental students to be readily trained in the public sector like their medical counterparts. If you couple this constraint with the fiscal rethinking happening in Canadian universities generally, and dental faculties specifically — which are seen to have an excessively high training cost per student — it is not surprising that the trend seems to be towards eliminating dental faculties. To date, the compromise has been to merge some faculties of dentistry with existing medical schools.

One of the more disturbing realities behind this approach is the sudden increase in tuition fees, which is based on the so-called principle of "user pay." Following one recent merger, the cost per student was evaluated at \$30,000 a year; of that amount, the university would pay a subsidy of \$17,000 and the provincial government would provide a grant of \$5,000, leaving each student with \$8,000 in annual fees.

For dental students, these fees represent a lot of money over the course of a program. Remember that dental students almost always come from other postsecondary programs, so they often bring a substantial debt load with them into the professional faculty. The cost of instruments and supplies represents a significant, added expense. It is not uncommon, therefore, for a student to graduate with a six-figure debt, including living expenses. The cost of setting up a practice, when added to the existing debt load, becomes enormous. This helps explain why few graduates actually set up or buy a practice immediately after graduation.

It seems only fair and reasonable that organized dentistry become involved in this issue. After all, these graduates are our future. As we prepare our profession for the next century, we will need to reassess our involvement in the process of training dental students, perhaps with a view to lobbying politicians to stabilize costs for professional students, or to working with university dental schools to provide some source of funding — both through scholarships and loans — for every student, based on need. If we are to ensure that all students, and not just the offspring of wealthy parents, have an opportunity to become qualified dental professionals, then organized dentistry must get involved and lobby effectively on their behalf. I would like to hear your opinion on this important issue.

*Richard D. Sandilands, DDS
President of the Canadian Dental Association*

Letters

EDITOR'S COMMENT

The *Journal* welcomes letters from readers about topics that are relevant to the dental profession. The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association. Letters should ideally be no longer than 300 words. If what you want to say can't fit into 300 words, please consider writing a piece for our Debate section.

CDA AND VOLUNTARY MEMBERSHIP

There are 16,000 dentists in Canada. Of those, only 10,000 pay active membership dues in CDA. Can 60% of Canadian dentists sustain a national voice for dentistry?

Dr. Sandilands confirmed in his November column entitled *Getting It Straight* that "questions regarding the necessity of membership in CDA are part of the ongoing debate across the country."

If, as I suspect, there is little change in the membership numbers from voluntary provinces, then the paying members of CDA will have to *see* value in their support of this national organization. Concerns relating to non-members receiving some membership benefits, accountability (best use of dollars), and seemingly ineffective governance (direction and agenda not reflecting members' needs) must be addressed.

These concerns are symptoms of a larger problem. *The real fear is that the continual erosion of membership numbers will render CDA unable to speak and act for dentistry.* Governments and insurance companies would be eager to do just that in its place!

Resolving these problems should follow a pattern we, as dentists, use daily. We gather information, examine the problem and arrive at a diagnosis. This is before treatment commences. We do not treat symptoms. We avoid providing

unnecessary services and we definitely do not provide services for which we will not be paid.

CDA must address the underlying causes of these problems. Who does the Association serve? Are the services provided also needed? Are we served in the manner we request and are willing to pay for?

I support the need for a national body, but I am sure we can improve its structure, accountability and services. Let's identify exactly what the members (individual, corporate and regulatory bodies) want CDA to do and what they are willing to pay for.

I urge the leadership of CDA to address the problem now, before it reaches a critical stage.

*Daniel Coffin, DDS
Fredericton, N.B.*

RESPONSE FROM DR. SANDILANDS

Your comments on the subject of membership are similar to those of other colleagues who have taken the time to respond to my column. I only wish the answers to the problem of voluntary membership were as easy to formulate as the questions. I do not share your fear that CDA will eventually be rendered useless because of a lack of majority of membership. CDA performs a critical function for all dental professionals in Canada — that of a national, unified voice across the country. That voice is heard in political arenas from St. John's, Nfld., to Victoria, B.C. The vast majority of dental professionals, who seemingly do not care enough to get involved under normal circumstances, understand the value of a national association, as exhibited during the campaign to defeat the taxation of dental plan premiums several years ago. However, it is fair to say that we might envision a scenario where the basis for determining membership could change, say from an individual membership to a corporate membership, wherein all

members of a corporate body would automatically be enrolled as members of CDA. This, of course, is pure conjecture at the moment. For your information, the situation in organized dentistry in Canada is not unique, other national associations having to face a similar reality. Welcome to Canadian politics!

CDA is looking ahead to August 7, 1999, when the first tripartite meeting involving dental regulatory authorities, corporate members and CDA will attempt to answer the questions you have raised. This historic meeting will take place as part of the Canadian Dental Association/Nova Scotia Dental Association national convention. In the meantime, let me say that CDA is actively working to increase membership in the "voluntary" provinces. While it may seem to be an inequitable situation at present, there are currently many new members joining CDA from those provinces.

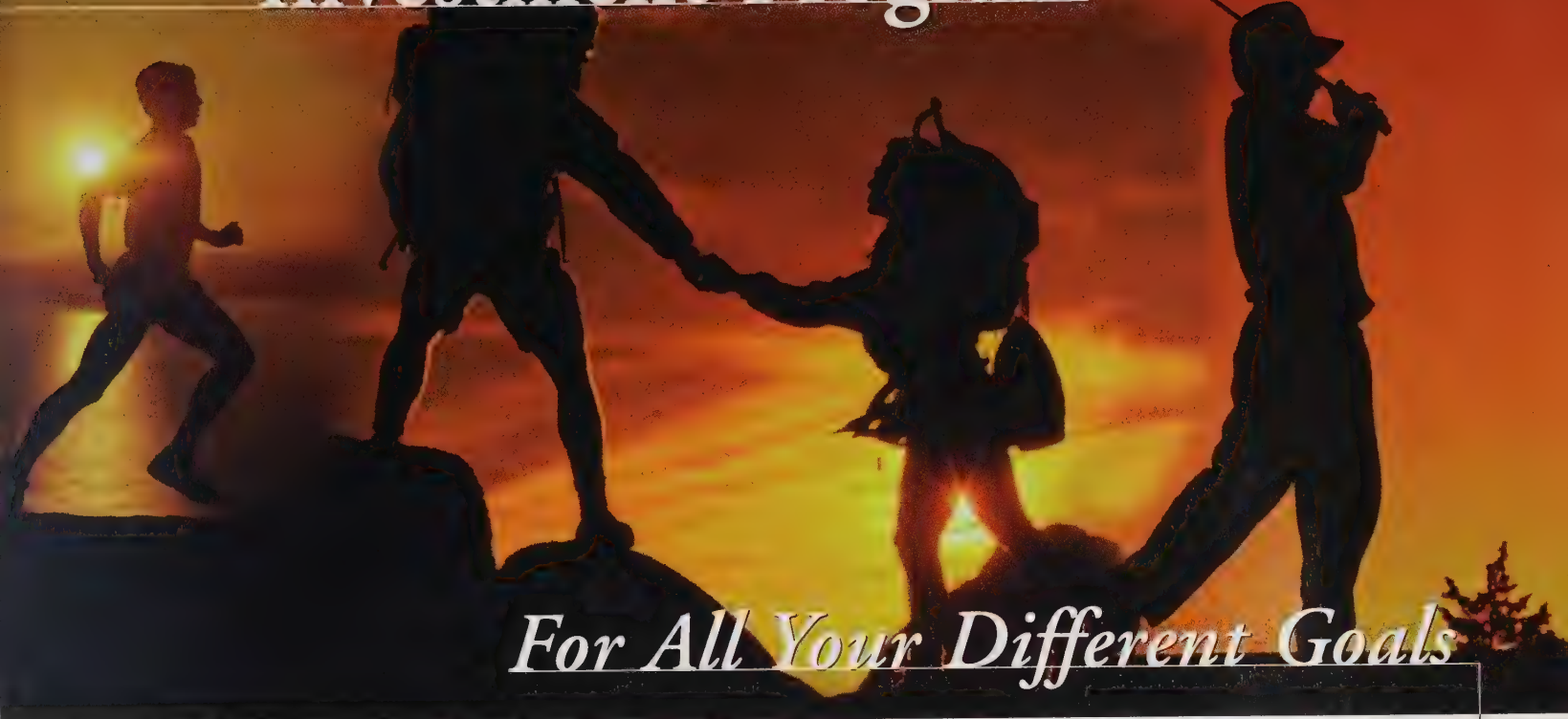
Thank you for expressing your views to our readers.

*Richard D. Sandilands, DDS
President of the Canadian Dental Association*

DENTISTS AND HIV

Erroneous information concerning our research investigating dentists' attitudes towards HIV¹ was published in the *Globe and Mail* on March 31, 1999. The main findings of our national survey were that 16% of respondents would refuse to treat patients with HIV and that this refusal was primarily associated with a lack of training in ethics and knowledge of HIV and a fear of infection. Only 5% of dentists under 30 would refuse treatment to HIV patients compared with 27% of those over 60. The percentages of respondents who reported willingness to treat were 81% (HIV); 87% (hepatitis B virus); 86% (intravenous drug abusers); 94% (homosexuals/bisexuals); 97% (recipients of blood products); and 94% (history of sexually transmitted disease).¹

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No data were collected relating to the hepatitis C virus.

To improve access to care for patients with infectious diseases, initiatives are required to better select and educate dental students and promote continuing education for dentists. As a result of our findings, the undergraduate curricula in dentistry, medicine and nursing at the University of Western Ontario (UWO) have been strengthened, with emphasis on ethics, infection control and risk assessment. Recent surveys of final year students in these disciplines indicated that almost all would be willing to provide treatment to persons living with HIV. In addition, potential applicants to the health sciences faculties at UWO are informed that they are expected to treat patients with infectious diseases including HIV and the hepatitis viruses. If they have concerns, they then have the opportunity to consider other programs.

We do have evidence that dentists' willingness to treat patients with HIV has significantly improved in the last six years^{2,3} and that the great majority of HIV patients receiving dental care are satisfied with their treatment.^{4,5} Hopefully, interventions such as those introduced at UWO will promote further improvements in access to dental care for patients with HIV, hepatitis B or hepatitis C.

Gillian M. McCarthy, BDS, M.Sc.

John J. Koval, PhD

John K. MacDonald, MA

School of Dentistry and Department of
Epidemiology and Biostatistics
Faculty of Medicine and Dentistry
University of Western Ontario

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CDA RESOURCE CENTRE

I am writing to express my gratitude to the CDA Resource Centre staff who recently helped me prepare for a presentation on nursing caries I was to do in South America. I live far from a medical library, so doing a literature search on any subject presents a logistical problem. I wanted information on the comparative expected longevity of the common types of pediatric restorations and really did not know how to proceed. I contacted CDA via e-mail and was put in touch with Martha Vaughan. She provided me with a library package consisting of abstracts of more than 25 recent articles on my topic of interest. She also made it clear that I could obtain copies of any or all of the complete articles referred to in the abstracts. Timely, convenient and complete is how I describe the service I received from CDA and Martha. All of the written material was transferred via the Internet. I suppose old fashioned mail is also available for those who prefer that. The point is that I was able to access exactly the information I wanted quickly and conveniently through this valuable service offered by CDA. Thank you for your help!

Michael G. Christensen, B.Sc., DDS
Kenora, Ont.

CDA JOURNAL

Now that I receive the *CDA Journal* online, may I suggest that you stop sending me the printed version? I am quite content reading it online, and if that helps save some resources, it's an added bonus. Maybe you should do a survey to see how many other dentists share my opinion. You could save money and be more environmentally friendly at the same time. Let me know if you plan to follow up on this plan so I can sell my shares in Abitibi!

Noah Weiszner, DMD
Winnipeg, Man.

PRACTICE MANAGEMENT IN DENTAL SCHOOLS

I take my hat off to Andrew Kay and Deborah Saunders, the two young authors of the *Journal* article entitled "Practice Management in Dental Schools — Is There Such a Thing?" (*J Can Dent Assoc* 1999; 65:142,179). They have hit the nail on the head as far as identifying most of the problems facing organized dentistry today and the weaknesses of practice management training in dental schools. I could write a book on the bad experiences I have faced as a result of a lack of proper training in this area, including how to negotiate in the business world, how to invest your hard-earned money, how to arrange for retirement and, most importantly, how to deal with income tax (i.e., if, when and how to pay, defer or reduce it). I taught at the Universities of Toronto and Western Ontario dental faculties for more than 10 years and tried to warn them that business education was lacking in the curriculum. But it was an unwritten "law" never to talk to the students about money. So my pleas for reform fell on deaf ears.

Dentists who could be making a very comfortable living from their dental skills are seriously handicapped by their lack of business acumen. If, 10 to 20 years ago, dentists survived, it was because the law of supply and demand was in their favour. Things have changed, however. The main reason why so many young dentists find themselves before the Royal College of Dental Surgeons defending their actions is probably not because of greed but rather because of poor business training in dental school.

What is out there now for dentists? Practice management gurus have invaded our profession; practice management courses are the hottest item at conventions. Dentists are scrambling to learn more business skills to ensure their survival before it is too late.

Continued on page 358

Dalacin® C Capsules

(clindamycin hydrochloride)
50mg, 300mg

The recent edition of the Sanford Guide to Antimicrobial Therapy 1998 recommends Clindamycin as

The First Line Antibiotic for empirical therapy of Odontogenic Infections¹

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Empirical Antimicrobial Therapy on Clinical Grounds

Optimal antimicrobial therapy is based upon accurate diagnosis of indication & susceptibility testing indications of casual agents; these are only "INITIAL" guidelines)

Anatomic site / Diagnosis / Modifying Circumstances	Etiologies (usual)	Suggested Regimens+		Therapeutic Measures and Comments
		Primary*	Alternative++	
Odontogenic Infection	Oral microflora	Clindamycin 300mg q6h po	(AM/CL+++ 875/125mg bid or 500/125mg tid po) or erythromycin 500mg q6h po	+Surgical drainage and removal of necrotic tissue essential. β-Lactamase resistant organisms are increased in frequency.**

+ Dosages suggested are for adults, with clinically severe (often life-threatening) infections. Dosage also assure normal renal function, and not severe hepatic dysfunction.

++ Alternative therapy includes these considerations: allergy, pharmacology/pharmacodynamics, compliance, local resistance profiles.

+++AM/CL = amoxicillin/clavulanate.

Adapted from Sanford Guide 1998

* Penicillin, which was the antibiotic of choice for a long time, induces the production of β-lactamase by certain anaerobes, specifically *Bacteroides*² species, and clinical failures have been increasingly reported in the literature.

** In Canada, most *Bacteroides* species are resistant to penicillin.

Dalacin® C capsule indicated in the treatment of serious infections due to sensitive anaerobic bacteria, such as *Bacteroides* species, peptostreptococcus, anaerobic streptococci, clostridium species and microaerophilic streptococci. Also indicated in serious infections due to sensitive gram-positive organisms (staphylococci, including penicillinase-producing staphylococci, streptococci and pneumococci) when the patient is intolerant of, or the organism is resistant to other appropriate antibiotics.

Dalacin® C capsule indicated for prophylaxis against α-hemolytic (viridan group) streptococci before dental, oral and upper respiratory tract surgery.

Most commonly reported side effects are diarrhea (2.6%) and vomiting (1.6%). For warnings please refer to the prescribing information.

Available on the following formularies:

50 mg capsule: all formularies. 300 mg capsule: Ontario, Quebec, British Columbia, Alberta, Saskatchewan, Manitoba, Nova Scotia, Newfoundland.

References:

Sanford J.P et al., The Sanford Guide to Antimicrobial Therapy (28th ed.) 1998:31

Zambrano et al., Clindamycin in the treatment of Human Infections, 1993; 10-21

Penicillin Product Monograph: CPS, 33rd edition, 1998



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Dalacin® C

Prescribing Information - Dalacin® C capsules

Antibiotic

Action - Clindamycin exerts its antibacterial effect by causing cessation of protein synthesis and also causing a reduction in the rate of synthesis of nucleic acids.

INDICATIONS - Dalacin® C (clindamycin hydrochloride) is indicated in the treatment of serious infections due to sensitive anaerobic bacteria, such as bacteroides species, peptostreptococcus, anaerobic streptococci, clostridium species and microaerophilic streptococci.

Dalacin® C is also indicated in serious infections due to sensitive gram-positive organisms (staphylococci, including penicillinase-producing staphylococci, streptococci and pneumococci) when the patient is intolerant of, or the organism resistant to other appropriate antibiotics.

Dalacin® C is indicated for the treatment of the *Pneumocystis carinii* pneumonia in patients with AIDS. Clindamycin in combination with primaquine may be used in patients who are intolerant to, or fail to respond to conventional therapy.

Dalacin® C is indicated for prophylaxis against alpha-hemolytic (viridans group) Streptococci before dental, oral and upper respiratory tract surgery.

- The prophylaxis of bacterial endocarditis in patients allergic to penicillin with any of the following conditions: congenital cardiac malformations, rheumatic and other acquired valvular dysfunction, prosthetic heart valves, previous history of bacterial endocarditis, hypertrophic cardiomyopathy, surgically constructed systemic-pulmonary shunts, mitral valve prolapse with valvular regurgitation or mitral valve prolapse without regurgitation but associated with thickening and/or redundancy of the valve leaflets.
- Patients taking oral penicillin for prevention or recurrence of rheumatic fever should be given another agent such as clindamycin, for prevention of bacterial endocarditis.

CONTRAINDICATIONS - As with all drugs, the use of Dalacin® C (clindamycin hydrochloride) is contraindicated in patients previously found to be hypersensitive to this compound. Although cross-sensitization with Lincocin® (lincomycin hydrochloride) has not been demonstrated, it is recommended that Dalacin® C not be used in patients who have demonstrated lincomycin sensitivity.

Until further clinical experience is obtained Dalacin® C is not indicated in the newborn (infants below 30 days of age), or in pregnant women.

WARNINGS - Some cases of severe and persistent diarrhea have been reported during or after therapy with Dalacin® C (clindamycin hydrochloride). This diarrhea has been occasionally associated with blood and mucus in the stools and has at times resulted in acute colitis. When endoscopy has been performed, some of these cases have shown pseudomembrane formation.

If significant diarrhea occurs during therapy, this drug should be discontinued or, if necessary, continued only with close observation. Significant diarrhea occurring up to several weeks post-therapy should be managed as if antibiotic-associated.

If colitis is suspected, endoscopy is recommended. Mild cases showing minimal mucosal changes may respond to simple drug discontinuance. Moderate to severe cases, including those showing ulceration or pseudo membrane formation should be managed with fluid, electrolyte, and protein supplementation as indicated. Corticoid retention enemas and systemic corticoids may be of help in persistent cases, anticholinergic and antiperistaltic agents may worsen the condition. Other causes of colitis should be considered.

Studies indicate a toxin(s) produced by Clostridia (especially Clostridium difficile) may be a principal cause of clindamycin and other antibiotic-associated colitis. These studies also indicate that this toxigenic Clostridium is usually sensitive in vitro to vancomycin. When 125 mg to 500 mg of vancomycin were administered orally four times a day for 5 - 10 or more days, there was a rapid observed disappearance of the toxin from fecal samples and a coincidental recovery from the diarrhea.

It should be noted that serious relapses have occurred up to one month after apparently successful treatment. A relatively prolonged period of continuing observation is therefore recommended.

In patients with G-6-PD deficiency, the combination of clindamycin with primaquine may cause hemolytic reactions; reference should also be made to the primaquine product monograph for other possible risk groups for other hematologic reactions.

PRECAUTIONS - Dalacin® C (clindamycin hydrochloride) like any drug, should be prescribed with caution in atopic individuals.

The use of antibiotics occasionally results in overgrowth of non-susceptible organisms particularly yeasts. Should super-infections occur, appropriate measures should be taken as dictated by the clinical situation.

As with all antibiotics, perform culture and sensitivity studies in conjunction with drug therapy.

Since abnormalities of liver function tests have been noted occasionally in animals and man, periodic liver function tests should be performed during prolonged therapy. Blood counts should also be monitored during extended therapy.

Routine blood examinations should be done during therapy with primaquine to monitor potential hematologic toxicities.

Dalacin® C may be used in anuric patients. Since the serum half-life of clindamycin in patients with impaired hepatic function is greater than that found in normal patients, the dose of Dalacin® C should be appropriately decreased. Hemodialysis and peritoneal dialysis are not effective means of removing the compound from the blood. Periodic serum levels should be determined in patients with severe hepatic and renal insufficiency.

ADVERSE REACTIONS - Only 65 of the 851 patients treated for infections developed side effects representing 7.6% of the total study group or 8.0% of the 813 patients with follow-up. Only 22 of these patients' symptoms were considered due to Dalacin® C (clindamycin hydrochloride) for an incidence of 2.7% among the 813 cases with follow-up.

Gastrointestinal - Abdominal pain occurred in 12 patients for an overall incidence of 1.4% in 851 patients and was considered drug related in 7 (0.8%).

Diarrhea occurred in 22 cases for an overall incidence of 2.6% and was drug related in 13 (1.5%). Vomiting occurred in 14 cases with an overall incidence of 1.6%. Seven patients (0.8%) had nausea which was drug related in 2 cases (0.2%). Side effects were severe in 10 instances. (See also under "WARNINGS"). Esophagitis, at times severe, has been reported.

Hemopoietic - Transient neutropenia (leukopenia) has been reported. Its relationship to therapy is unknown. No irreversible hematologic toxicity has been reported. However, in clindamycin/primaquine combination studies, serious hematologic toxicities (grade III, grade IV neutropenia or anemia, platelet counts < 50 X 10³/L, or methemoglobin levels of 15% or greater) have been observed.

Skin and Mucous Membranes - Skin rashes have been reported in 6 patients (0.7%), none of which could be determined as drug related. One case of urticaria was reported but its relationship to drug therapy could not be determined.

Liver - Although no direct relationship of Dalacin® C to liver dysfunction has been noted, transient abnormalities in liver function tests (elevations of alkaline phosphatase and serum transaminase) have been observed in a few instances.

SYMPTOMS AND TREATMENT OF OVERDOSAGE - No cases of overdosage have been reported. It would be expected however, that should overdosage occur, gastrointestinal side effects including abdominal pain, nausea, vomiting and diarrhea might be seen. During clinical trials one 3-year old child was given 100 mg/kg of Dalacin® C (clindamycin hydrochloride) for five days and showed mild abdominal pain and diarrhea. One 13-year old patient was given 75 mg/kg for five days with no side effects. In both cases laboratory values remained normal.

Overdosage should be treated with simple gastric lavage. No specific antidote is known.

DOSAGE AND ADMINISTRATION

Adults:	150 mg every 6 hours.
Moderately severe infections:	300 mg every 6 hours.
Severe infections:	450 mg every 6 hours.
Children (over one month of age):	

One of the following two dosage ranges should be selected depending on the severity of the infection:

- 8-16 mg/kg/day (4-8 mg /lb/day) divided into 3 or 4 equal doses.
- 16-20 mg/kg/day (8-10 mg/lb/day) divided into 3 or 4 equal doses.

Pneumocystis carinii pneumonia in patients with AIDS:

Dalacin C (clindamycin hydrochloride) 300-450 mg may be given orally every 6 hours in combination with 15-30 mg of primaquine for 21 days. Alternatively, DALACIN C PHOSPHATE (clindamycin phosphate) 600-900 mg (IV) may be given every 6 hours or 900 mg (IV) every 8 hours in combination with oral daily dose of 15-30 mg of primaquine. If patients should develop serious hematologic adverse effects, reducing the dosage regimen of primaquine and/or DALACIN C capsule should be considered.

Absorption of Dalacin® C (clindamycin hydrochloride) is not appreciably modified by ingestion of food and may be taken with meals.

To avoid the possibility of esophageal irritation, Dalacin® C capsules should be taken with a full glass of water.

For prevention of endocarditis: Adults: 300 mg orally 1 hour before procedure; then 150 mg 6 hours after initial dose. Children: 10 mg/kg (not to exceed adult dose) orally 1 hour before procedure; then 5 mg/kg 6 hours after initial dose.

Note: With b-hemolytic streptococcal infections, treatment should continue for at least 10 days to diminish the likelihood of subsequent rheumatic fever or glomerulonephritis.

AVAILABILITY OF DOSAGE FORMS

Each capsule contains clindamycin hydrochloride hydrate equivalent to 150 mg or 300 mg clindamycin base. Supplied in bottles of 100 and 500 capsules.

Product monograph available upon request.



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CDSPI Reports

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Did you know that as a dentist, you're entitled to a whole range of special products and services that save you money and time — and can give you greater peace of mind?

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How does the Member Services Program work for you?

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We've arranged a series of deals for dental professionals, their families and staff. For example:

Save money on the installation of office and home security systems from ADT through the CDSPI Security for Business Program. The Focus 6+ office security system is available at a special price of \$249 for a 60-month monitoring agreement at \$27.95 (plus taxes) per month. This deal saves you \$150 off the regular installation price. You save even more because the first three months' monitoring is free. You can also get a 50% discount on the installation of a home security system.

Gain lower mortgage rates through the CDSPI Group Mortgage Advantage Program and Sun Life Trust. Unique products such as Prime Minus and Interest Saver Plus quote mortgage rates lower than the rates quoted by the banks. "Extras" include a cash back reward on signing a mortgage and membership in the Mortgage Club,

which gives special discounts from suppliers such as Panasonic.

Manage your money better when leasing a vehicle. Newcourt Fleet Services, through the Canadian Dental Auto Leasing Program, offers a leasing program with highly competitive total lease costs and flexible payment options. And since you don't need a large down payment and your monthly payments are lower than if you had a bank loan for a car purchase, you may be able to manage your money better.

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Get help — free — through the Members' Assistance Program (MAP), a no-cost, confidential service offering short-term counselling, consulting and referrals.

2. IT'S CONVENIENT

These days, the old adage "time is money" is truer than ever. And because of that, we've found great ways to save you time:

Relax when you order an alarm system through the CDSPI Security for Business Program. An expert from ADT will come to your home or office and conduct a thorough security analysis that will show you the type of system that best fits your needs.

Get additional mortgage funds easily. With the Credit Line Mortgage, offered through the CDSPI Group Mortgage Advantage Program and Sun Life Trust, you take only the funds you need but you can gain additional funds easily.

Save time when you lease a vehicle from Newcourt Fleet Services, through the Canadian Dental Auto Leasing Program. When you call to arrange a lease, a consultant will do the legwork for you, providing details on your desired make and model, helping you decide which type of lease is right for you, arranging your lease, scheduling a test drive and

arranging for the vehicle to be delivered to you at your convenience.

Have your insurance reviewed for you. The Insurance Review Service is free, fast and easy to use. All the facts about the plans you send in are presented impartially and written in plain language, letting you make no-stress decisions.

Professional help for personal problems is available whenever you need it — 24 hours a day, seven days a week — through the Members' Assistance Program.

3. IT CAN GIVE YOU GREATER PEACE OF MIND

A little less tangible but no less important benefit of Member Services is the enhanced peace of mind you can enjoy through its products and services.

Sleep easier. If you've taken advantage of the CDSPI Security for Business Program, you can rest easy knowing that you've already taken the number one step in deterring a break-and-enter by installing a monitored alarm system. And because your home or office alarm system is from ADT, you also know that it is backed by North America's oldest and largest security provider.

Don't sweat interest rate changes with the CDSPI Mortgage Advantage Program offered through Sun Life Trust. Attractive rates, unrivaled flexibility and a range of mortgage offerings plus a consumer information service providing up-to-date market information, help you calmly ride out any economic bumps.

Happy motoring if you've leased a car through Newcourt Fleet Services and the Canadian Dental Auto Leasing Program. Whether you've leased a new or a used vehicle, you can rest assured knowing that you've received the best possible lease structure and advice. You can relax not only because the new car you've leased is covered under the manufacturer's warranty, but also because you can arrange for an extended

Continued on page 358

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CDA Fund Performance (for period ending April 30, 1999)

	1 year	3 years	5 years	10 years	RRSP Eligible
CDA CANADIAN GROWTH FUNDS					
Aggressive Equity Fund (Altamira)	-19.3%	5.3%	5.2%	n/a	✓
Common Stock Fund (Altamira)	-1.7%	6.0%	7.1%	7.9%	✓
Canadian Equity Fund (Trimark) ^{†1}	1.2%	9.7%	10.1%	11.0%	✓
Special Equity Fund (KBSH) ^{†2}	9.7%	27.5%	26.1%	n/a	✓
TSE 35 Index Fund (Sun Life of Canada) ^{††}	-3.5%	16.0%	14.9%	9.8%	✓
CDA INTERNATIONAL GROWTH FUNDS					
Emerging Markets Fund (KBSH)	-22.2%	-17.1%	n/a	n/a	✓
European Fund (KBSH)	3.2%	17.8%	n/a	n/a	✓
International Equity Fund (KBSH)	8.7%	7.7%	n/a	n/a	✓
Pacific Basin Fund (KBSH)	36.9%	6.3%	n/a	n/a	✓
US Equity Fund (KBSH) ^{†3}	6.8%	19.6%	18.4%	16.8%	✓
Global Fund (Trimark) ^{†4}	5.4%	12.0%	14.4%	15.3%	✓
Global Stock Fund (Templeton) ^{†5}	2.1%	n/a	n/a	n/a	✓
S&P 500 Index Fund (Sun Life of Canada) ^{††}	22.4%	31.3%	27.5%	20.6%	✓
CDA INCOME FUNDS					
Bond & Mortgage Fund (Canagex)	5.4%	8.2%	8.7%	9.8%	✓
Fixed Income Fund (McLean Budden) ^{†6}	5.9%	10.5%	10.3%	10.6%	✓
CDA CASH AND EQUIVALENT FUND					
Money Market Fund (Canagex)	4.3%	3.8%	4.8%	6.6%	✓
CDA GROWTH AND INCOME FUNDS					
Balanced Fund (KBSH)	0.9%	10.6%	10.5%	9.7%	✓
Balanced Fund NR (KBSH) ^{†††}	n/a	n/a	n/a	n/a	
Ethical Balanced Pooled Fund (Ethical Funds) ^{††††}	-11.8%	9.7%	9.9%	n/a	✓

CDA figures indicate annual compound rate of return. All fees have been deducted. As a result, performance results may differ from those published by the fund managers. CDA figures are historical rates based on past performance and are not necessarily indicative of future performance.

† Returns shown are those for the following funds in which CDA funds invest: ¹Trimark Canadian Fund, ²KBSH Special Equity Fund, ³KBSH US Equity Fund, ⁴Trimark Fund, ⁵Templeton Global Stock Trust Fund, ⁶McLean Budden Fixed Income Fund.

†† Returns shown are the total returns for the indexes tracked by these funds.

††† Introduced in September 1998.

†††† The CDA Ethical Balanced Pooled Fund invests in a fund that mirrors the Ethical Balanced Fund (Ethical Funds).

For current unit values and GIC rates call CDSPI toll-free at 1-800-561-9401, ext. 350 or visit the CDSPI website at www.cdspi.com.



News

FLUORIDE BACK IN THE NEWS

The controversy surrounding water fluoridation has reared its head once again. Recent reports in major Canadian newspapers, including the *Globe and Mail*, the *Toronto Star* and the *Calgary Herald*, have questioned the benefits of fluoride and the need for water fluoridation given the occurrence of fluoride in toothpaste, foods and beverages.

CDA president Dr. Richard Sandilands responded to the *Star's* report with a letter to the editor in which he outlined the reasons for CDA's support of water fluoridation, saying "We now know that fluoride works mainly after the eruption of teeth. We also know that drinking fluoridated water continues to benefit everybody, including those at high risk, or the 20% of the population with 80% of the decay." In the meantime, CDA continues to monitor relevant information to determine if a need for a review of the current policy will be necessary. CDA supports water fluoridation as a proven, economical and effective means of preventing dental caries and recommends that fluoride levels in community water supplies be continually monitored and adjusted to ensure accurate concentrations and avoid fluctuations. ♦

CANADIANS PARTICIPATE IN INTERNATIONAL MEETING ON DENTAL DEVICES AND MATERIALS

Last fall, seven Canadian delegates joined some 300 expert delegates in London, England, for the 34th meeting of the International Standards Organization (ISO) Committee on dentistry. The delegates participated in seven sub-committees, drafting and developing standards for filling and restorative materials, prosthodontic materials, terminology, dental instruments, dental equipment, oral hygiene products and dental implants. To date, the ISO dental technical committee has developed more than 90 dental standards and is currently working on 65 new or revised standards. The standards, which deal

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The **scientific program** will focus on the very latest developments in dentistry and will feature internationally renowned speakers. The varied presentation schedule — lectures, symposia, courses and table clinics — is sure to please every member of the dental team, including dentists, technicians, hygienists and nurses.

The **World Dental Trade Exhibition** will highlight the equipment of the future as hundreds of national and international exhibitors display the latest in dental technology.

A series of **social activities** is designed to take advantage of this lovely location, including cultural and sightseeing tours and sporting activities.

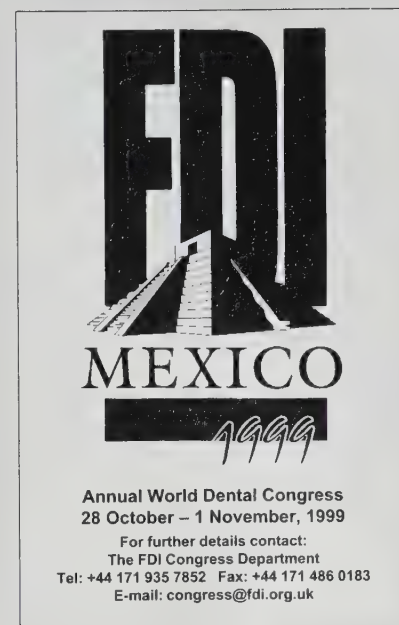
Why not combine this marvellous educational experience with a holiday? Explore Mexico's baroque churches, ancestral Aztec temples, world-famous museums and parks while keeping up-to-date on dentistry.

See you in Mexico City! ♦

with biological safety and performance, have a direct impact on the quality of dentistry.

Canada has been involved in the development of ISO standards for the past 20 years. "Canada's participation is highly valued for the technical and scientific expertise that we are able to bring to the committee," explains Dr. Derek Jones, leader of the delegation and chair of the sub-committee on filling and restorative materials. "Canada is also seen as providing a leadership role that helps maintain a balance of fairness between the large single market in the European Economic Community and the major markets in North America."

Accompanying Dr. Jones to the week-long meeting were Drs. Dorothy McComb, Michael Rivard, Dorin Ruse, Dennis Smith, Peter Williams, and Benoit Soucy, CDA's manager of professional services and expert delegate to the



sub-committee on terminology. The Canadian Advisory Committee wishes to acknowledge the generous financial support of Ash Temple, Beavers Dental, Colgate and the Dentistry Canada Fund, as well as the cooperation of the Standards Council of Canada and the Canadian Standards Association. ♦

APPOINTMENTS

CANADIAN DENTISTS ELECTED TO AMERICAN ORGANIZATIONS

Drs. David Sweet and David S. Precious have been elected to serve as president and board member respectively of two American dental organizations.

Dr. David Sweet was elected president of the American Society of Forensic Odontology at its annual scientific session this past February. Dr. Sweet is currently associate professor at the University of

British Columbia's dental faculty and director of the Bureau of Legal Dentistry Laboratory in Vancouver, B.C.



Dr. David Sweet

Dr. Precious, currently head of the department of oral and maxillofacial surgery at the Queen Elizabeth II Health Sciences Centre in Halifax, N.S., has been elected to the board of regents of the American College of Oral and Maxillofacial Surgeons. Dr. Precious repre-

sents Canada on the 7-person board, which is based in San Antonio, Texas. ♦

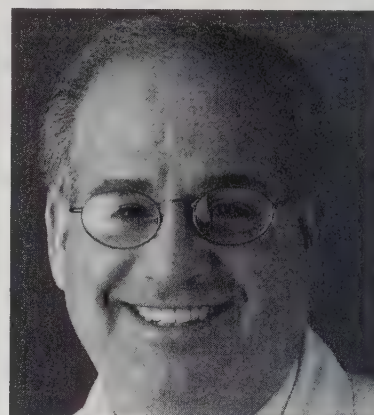


Dr. David S. Precious

NEW CHIEF OF DENTISTRY AT MCGILL'S JEWISH GENERAL HOSPITAL

Dr. Melvin Schwartz has been appointed chief, department of dentistry, at McGill University's Sir Mortimer B. Davis Jewish General Hospital. Dr. Schwartz joined the hospital's dentistry department in 1983. He is also director of

the dental residency program and of undergraduate training as well as section head of the operative dentistry division. ♦



Dr. Melvin Schwartz

REGISTRAR OF THE NEWFOUNDLAND DENTAL BOARD

Dr. Paul O'Brien took over the position of registrar at the Newfoundland Dental Board effective July 1998.

A 1970 graduate from Dalhousie University's dental faculty and former president of the Newfoundland Dental



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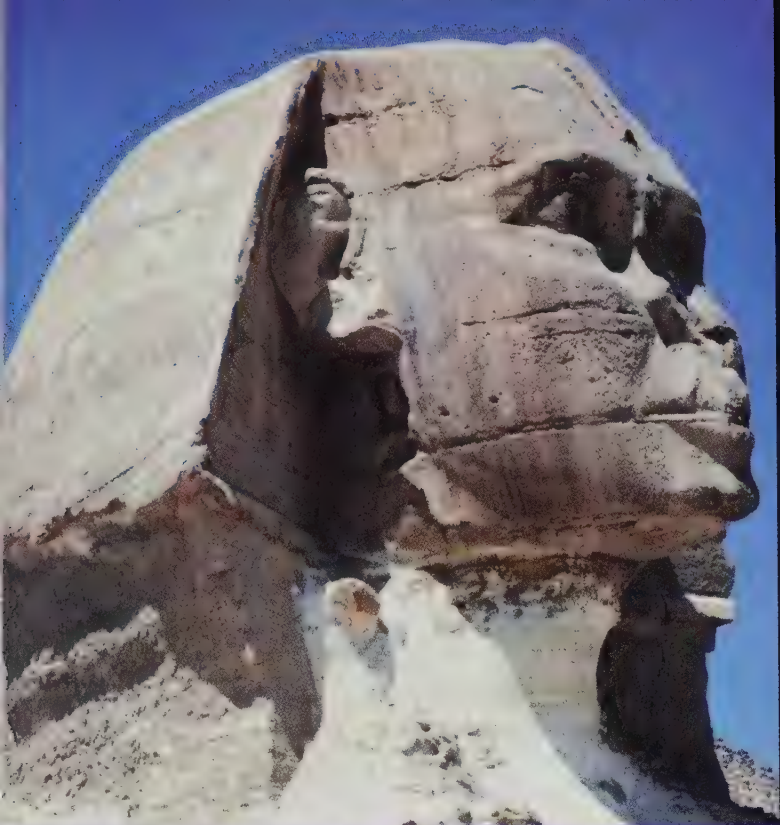
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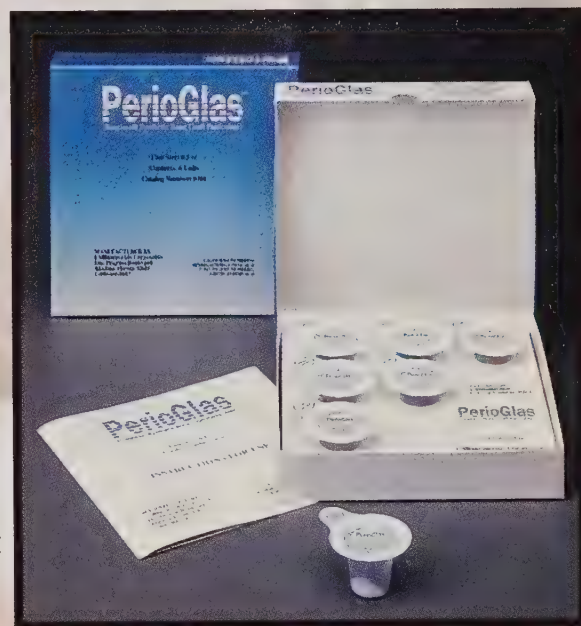
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Association., Dr. O'Brien maintains a private practice in St. John's, Nfld. ♦



Dr. Paul O'Brien

O B I T U A R I E S

Comeau, Dr. Julius: A 1949 graduate from the University of Montreal's dental faculty, Dr. Comeau, of Comeauville, N.S., died on November 25, 1998. He was a life member of CDA.

Ellmore, Dr. Frank C.: A 1978 graduate from the University of Michigan's dental faculty, Dr. Ellmore, of Weyburn, Sask., died in February of this year.

Holbrook, Dr. John G.: A 1943 graduate from the University of Toronto's dental faculty, Dr. Holbrook, of Dundas, Ont., died in March of this year.

Marion, Dr. Henri: A 1958 graduate from the University of Montreal's dental faculty, Dr. Marion, of Pembroke, Ont., died in March of this year.

McLean, Dr. James: A 1942 graduate from the University of Toronto's dental faculty, Dr. McLean, of Halifax, N.S., died in March of this year. Dr. McLean was dean of dentistry at Dalhousie from 1954 to 1975. In 1987, he received an honorary doctorate of law from Dalhousie, and was subsequently named dean emeritus of dentistry.

Stang, Dr. Edwin A.: A 1958 graduate from the University of Alberta's dental faculty, Dr. Stang, of Edmonton, Alta., died in February of this year.

Warren, Dr. Douglas H.: A 1944 graduate from the University of Alberta's dental faculty, Dr. Warren, of Surrey, B.C., died in January of this year. He was a life member of CDA.

COVER ARTIST:

DR. MICHAEL J. MAGUIRE

This month's featured artist is Dr. Michael J. Maguire of St. John's, Newfoundland. Dr. Maguire, a 1952 graduate from the University College of Dublin, Ireland, spent most of his practising life in Newfoundland. Now retired, he enjoys painting, gardening and playing golf.

The artwork on the cover, entitled *The Duke of Duckworth*, depicts a popular St. John's meeting place for Irish, English and Scots townspeople. The painting is inspired by local folklore: the ghost in the window facing the Duke is Irish poet Red Denis MacNamara, who was briefly exiled in St. John's in the mid-eighteenth century. MacNamara was famed as much for his love of the city's watering holes as for his scathing verse. Dr. Maguire describes the figure as "looking longingly across at the Duke, dying for a jar with his fellow countrymen or a chance to ridicule in verse the faithful hirelings of King George!" The painting was a going-away present for a medical acquaintance returning to Ireland after having spent several years practising in St. John's. ♦



E R R A T U M

In the May 1999 issue of the *Journal*, in the article "The Classification of Smile Patterns," by Dr. Edward Philips (65:252-4), Fig. 2 contained two images that were accidentally inverted. We are therefore reprinting the images, in the correct order, in this issue. The *Journal* regrets the error. ♦



Figure 2: Preoperative smile: Cuspid, Stage III, Type 4. Postoperative: 6 porcelain veneers; Cuspid, Stage III, Type 4.

Dental Benefits Issues

DENTISTRY'S COMMITMENT TO ACCESS

At its planning session last fall, the Executive Council initiated the CDA *Vision 2010* project. This undertaking encompasses the current strategic plan, which has seen CDA successfully concentrate on core business such as issues management, government relations and communications. The *Vision 2010* statement, "Leadership in Oral Health Care for Canadians — Ethical and Contemporary, Caring and Responsive," embraces change in the interest of improving oral health care. The statement commits CDA to working with other oral health services and to continuous learning, among other goals.

With the launch of this new course, the Dental Benefits Issues committee felt it was time to evaluate its role within the *Vision 2010* framework. The committee members believe that our mandate as a profession is really the protection of the public. For the privilege of self-government, dentistry promises to put the public's dental interest first. It also promises to sort through advances in technology and therapeutics with the public good in mind.

A very basic tenet of this mandate is access to care. One doesn't have to look very far into the future, however, to see to what extent this concept is in jeopardy.

Society is experiencing change. The day of the non-skilled labourer having full health and dental benefits coverage is becoming a thing of the past. More and more, companies are contracting without offering benefits. As well, free trade has seen the closure of many American plants in Canada as manufacturers seek cheaper labour in Mexico or the Far East. As a result of these

changes, workers have been left without the benefits they were accustomed to.

This forgotten sector of society has slipped through the cracks. Many are now existing on part-time work and seeking emergency care only as they are increasingly reluctant to spend what little disposable income they have on dental care. It seems we have raised a generation of workers who feel that government is responsible for their health care and employers, for their dental care.

Governments, however, are compromising on their commitment to look after their citizens as a result of health care cuts and greater administrative requirements. In Ontario, for example, oral health care providers are confounded by the Ontario Works program, which overburdens dental office staff with paperwork and confuses recipients as to the exact nature of the benefits they are entitled to receive. Red tape is also the reason why there have been delays in the provision of dental health care under the Non-Insured Health Benefits (NIHB) program.

Much to our profession's credit, dentists have continued to work within the bureaucracy on behalf of their patients, realizing that opting out of the system will mean their patients have even less chance of recovering dental costs than they do.

At the federal level, CDA is working with Health Canada's Medical Services Branch (MSB) to correct some of the problems related to the NIHB program. Among the issues currently under discussion is the centralized administration of predetermination through MSB or the NIHB administrator to ensure greater consistency among regional program offices. Another concern being addressed is the extensive information requirements imposed on health care providers, which not only create delays but suggest that clinical competence is being assessed. Finally, the issue of turnaround time on predetermination, which is still not being met on a regular basis, is also being examined.

The discussions between CDA and MSB have also reaped some positive results. MSB will soon announce changes to its tooth charting requirements, which will be mandatory for new patients at the first visit and for predetermination purposes only. MSB has also agreed to remove major restorative treatment from the \$600 predetermination threshold.

Everyone involved in the NIHB program recognizes that there is still much work to be done to ensure the program is administered as efficiently as possible. Dentistry's commitment is to work with the government to help design a straightforward dental program for all Native people in this country. Within this context, the DBI committee sees its role as one of promotion and education. With the development of good communication strategies and liaison work between government, oral health care providers and patients, access to quality dentistry can be improved.

One way we can work toward the future is to build on the present. CDA, in its meetings with MSB and First Canadian Health Management (FCHM), needs to know about your frustrations regarding NIHB so that the program can be improved. While individual problems should be brought directly to the attention of FCHM (toll-free number: 1-888-471-1111), the DBI committee asks you to document your problems with the NIHB program and to forward them to the coordinator of CDA's practice management support services department, so that common problems can be put on the agenda of future CDA/MSB/FCHM meetings. ♦

Dr. George Sweetnam is in private practice in Lindsay, Ont. He is a member of the CDA Executive Council and chair of the Dental Benefits Issues committee.

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Self-Learning Self-Assessment

The SLSA Program is published as a monthly feature in the *Journal of the Canadian Dental Association* as a resource for dentists wishing to enhance their knowledge and expertise. It is intended as a vehicle for self-learning and self-assessment. The program is based on a series of 40 questions, answers, rationales and references, followed by a quiz of 15 questions. Included with this issue, you will find the Quiz for the 1998-1999 SLSA Program, together with a response card.

All 10 provincial licensing authorities in Canada recognize the SLSA Program for continuing education credits. In order to receive these credits, dentists must complete and return the enclosed response card to the Canadian Dental Association by August 31, 1999. The names of those dentists who return the completed quiz response cards will be forwarded to their respective licensing authorities for consideration.

Answers to the Quiz will be published in the September 1999 issue of the *Journal*. Quiz results will not be provided by either CDA or SLSA.

Funding for the SLSA program
has been provided by:



Vital Pulp Capping: A Worthwhile Procedure

• Lawrence W. Stockton, DMD •

A b s t r a c t

Despite the progress made in the field of pulp biology, the technique and philosophy of direct vital pulp capping remains a controversial subject. Clinicians are well aware of the immediate and long-term success rates after root canal therapy, but are less certain of the success of vital pulp capping. Researchers have demonstrated that exposed pulps will heal and form reparative dentin. It is realized now that the variable prognosis of vital pulp capping is predominately a restorative issue.

The factors that can produce a successful vital pulp cap are discussed in conjunction with two popular techniques.

MeSH Key Words: acid etching, dental; calcium hydroxide; dental pulp capping.

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This article has been peer reviewed.

Vital pulp capping is the dressing of an exposed pulp with the aim of maintaining pulp vitality. Throughout the life of a tooth, vital pulp tissue contributes to the production of secondary dentin, peritubular dentin (sclerosis) and reparative dentin in response to biologic and pathologic stimuli. The pulp tissue — with its circulation extending into the tubular dentin — keeps the dentin moist, which in turn ensures that the dentin maintains its resilience and toughness. These characteristics ensure that the teeth can successfully resist the forces of mastication.

Although several studies¹⁻⁴ have shown that endodontic procedures have an effect on the tooth's dentin, others⁵ have suggested that it is the cumulative loss of dentin and the loss of the pressoreceptive mechanism⁶ and not the endodontic procedures that affect clinical performance. Whatever the reason, several studies⁷⁻⁹ have reported the higher failure rate of restored endodontically treated teeth. Since a non-vital tooth requires 2.5 times more of a load than a vital tooth to register a proprioceptive response¹⁰⁻¹² the natural protection against an overload is reduced and the probability of fracture increases. Also, because posts do not reinforce teeth^{7,9,13,14} but may weaken them, restorative procedures that help preserve pulpal vitality and eliminate the need for posts are desirable. However, if endodontic therapy is unavoidable, conservation of the remaining tooth structure is most important.

Major advances in the practice of vital pulp capping have been made, and the emphasis has shifted from the "doomed

organ" concept of an exposed pulp to one of hope and recovery. Long-term assessments of vital pulp caps with calcium hydroxide have shown very high success rates.¹⁵ Other studies¹⁵⁻¹⁸ have demonstrated that the exposed pulp possesses an inherent capacity for healing through cell reorganization and bridge formation when a proper biologic seal is provided and maintained against leakage of oral contaminants. Direct pulp capping should be used only on a vital pulp that has been accidentally injured and shows no other symptoms. Direct pulp capping should not be performed on a pulp that has been exposed as a result of penetrating caries.¹⁸ A successful pulp cap has a vital pulp and a dentin bridge within 75 to 90 days.¹⁹

The major causes of post-operative inflammation and pulp necrosis are non-sterile procedures and bacterial micro-infiltration of the pulp via dentinal tubules. These may result from contamination of an exposed pulp prior to or during cavity preparation, or as a result of improper sealing of the entire dentin substrate interface when placing the restoration.^{18,20,21} To decrease the chances of contamination the rubber dam either must be in place from the start of the restorative procedure or be placed once a pulp exposure has been recognized.

VITAL PULP CAPPING TECHNIQUES

Two techniques have demonstrated success with vital pulp capping — the calcium hydroxide technique^{15,18} and the total etch technique (Fig. 1).²²

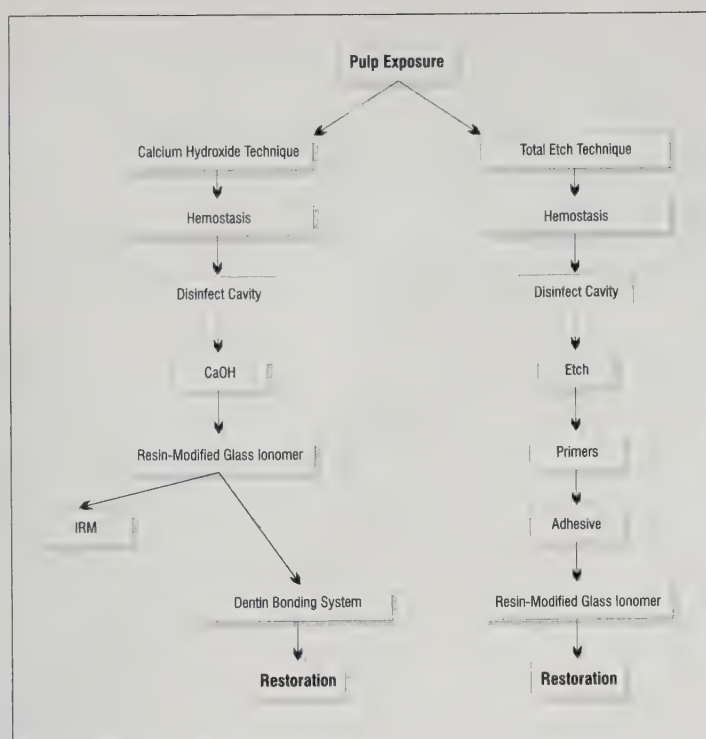


Figure 1: Direct vital pulp cap

For vital pulp capping to be successful, the tooth should be asymptomatic or have minimal symptoms and the bleeding *must* be controlled. This control may be achieved by washing the area with sterile saline and drying it with either paper points or cotton pellets, by using cotton pellets soaked with hydrogen peroxide or 5.25% sodium hypochlorite, or, if necessary, by using a hemostatic agent such as Hemodent¹⁵ (Premier Dental Products, Norristown, Pa.). If bleeding fails to stop after two or three attempts, then endodontic therapy should be considered.^{15,22} Several studies²³⁻²⁸ have indicated that the size of the perforation is less important than obtaining hemostasis.

Following hemostasis, a disinfectant (e.g., Cavity Cleanser, Bisco Dental Products, Itasca, Ill., or Consepsis, Ultradent Products Inc., South Jordan, Utah) should be placed on the cavity floor.²⁹ The area is then air dried, and calcium hydroxide in a formula such as Dycal (Dentsply Canada Ltd., Woodbridge, Ont.), Life (Kerr Manufacturing, Orange, Calif.) or Ultradent Calcium Hydroxide (Ultradent Products Inc., South Jordan, Utah) is placed directly in contact with pulp tissue. This step is very important, for the better the contact of the calcium hydroxide dressing with the pulpal wound, the better the healing.^{15,30} The calcium hydroxide should then be covered with a resin-modified glass ionomer extended onto dentin.³¹ Subsequently, a permanent restoration can be placed, with a dentin bonding system used to seal the margins of the restoration. An alternative is to place a zinc oxide–eugenol (IRM, L.D. Caulk, Dentsply Ltd., Woodbridge, Ont.) restoration over the calcium hydroxide cap.^{32,33} Zinc oxide–eugenol provides an excellent seal and, with its anti-microbial properties, makes for a very good temporary restoration. After three months, assuming pulp

vitality and no symptoms, the zinc oxide–eugenol can be removed and a more permanent sealed restoration placed.

For the total etch procedure, as with calcium hydroxide, hemostasis *must* be obtained. The exposure site is then covered with a non-setting calcium hydroxide paste (e.g., Pulpdent, Pulpdent Corp. of America, Brookline, Mass.) and the cavity preparation completed. Following disinfection of the cavity, the enamel and dentin are etched with 32% phosphoric acid for 15 seconds. The acid and calcium hydroxide are rinsed off and the preparation is lightly dried. The entire preparation — including enamel, dentin and pulpal tissue — is treated with a dentin bonding system (a fourth-generation system with a separate primer and adhesive is recommended, as little research has been published to date on the fifth-generation dentin bonding systems). Following placement of several layers of the hydrophilic primer, a thin layer of the adhesive resin is painted onto the enamel, dentin and pulpal tissue and light cured. A second layer of unfilled resin is applied, and a thin layer of resin-modified glass ionomer is also applied over and around the exposure site to mechanically protect the perforation from intrusion of the restorative material during packing or condensation. These layers are also light cured. The restoration is subsequently completed in conventional fashion.^{34,35}

DISCUSSION

The opponents of calcium hydroxide claim that it does not exclusively stimulate sclerotic dentin formation, dentinogenesis, reparative dentin formation or dentin bridge formation.³⁴ They also claim that it may dissolve after one year, that acids will degrade the interface during etching, and that calcium hydroxide does not adhere to dentin and will not adhere to bonding resin composite systems. One study³⁶ found that calcium hydroxide bases under resin composite restorations tended to pull away from the cavity surface during resin polymerization, leaving a gap between the calcium hydroxide and dentin. Cox and others³⁷ found a high rate of multiple tunnel defects (89%) in dentin bridges under calcium hydroxide. This high rate of defects, they suggest, places the long-term therapeutic effect of calcium hydroxide in serious doubt. They also suggest that calcium hydroxide disintegrates and is lost over a period of time.

It has been suggested that a very small exposure, and certainly a near exposure, cannot be treated with calcium hydroxide, as it is essential that the calcium hydroxide dressing make contact with living pulp tissue.¹⁵ In addition, Pashley³⁸ states that there may be little difference between a vital pulp cap and a situation where the remaining dentin thickness is less than 1 mm. He attributes this similarity to the high permeability of the dentin near the pulp. In a recent study,³⁹ opponents of the total etch technique found a 40% loss of pulp vitality over a period of 75 days with three bonding systems on exposed primate pulps. Of the remaining surviving pulps, only 53% even attempted bridge formation. Proponents of this technique point out that germ-free studies^{40,41} have shown that pulp heals rapidly even when bonding agents are placed directly on pulpal tissue.

The healing of pulp exposures may depend on the capacity of the capping material³³ to prevent bacterial microleakage. Pashley⁴² states that to minimize the pulpal response, restorative materials must seal the cavity margins, prevent microleakage and block bacterial substrates from penetrating through dentinal tubules to the pulp. However, if microleakage around various restorations could be measured *in vivo*, it is likely that all would exhibit some degree of leakage.³⁸ If these teeth remain asymptomatic, it is probably because the rate at which exogenous materials permeate across dentin to the pulp is balanced with the rate of removal of these materials by pulpal circulation, thus ensuring pulpal vitality.⁴⁰ Therefore, it is desirable to maximize the barrier effect of dentin to provide the best pulpal protection.³⁸ Each situation must be assessed to determine which method is most likely to achieve a maximal barrier effect.

A dentist's inability to perform proper pulp cap procedures can lead to microbial contamination, leftover dentinal debris in the wound and a lack of a dentin seal. Poor operator performance, therefore, rather than the inadequacies of the medicament, may be the cause of pulp-cap failure.¹⁵ In the case of recurrent pulpitis, therefore, one must distinguish between pulp-cap failure and failure of the restoration subsequently placed over the pulp-capping agent.⁴³

CONCLUSION

Mechanical exposures are more likely than carious exposures to be successfully capped. If the operator properly selects the case, obtains hemostasis, disinfects the exposure and the cavity preparation, and adequately seals the exposure and the cavity preparation, success can be obtained with either the calcium hydroxide technique or the total etch technique. Although both techniques can achieve successful vital pulp caps, the calcium hydroxide technique has demonstrated its success over a longer period of time. Which technique offers the better prognosis awaits the results of many more long-term studies.

For unknown reasons, the pulp-capping agent used, and not the procedure itself, has been the subject of controversy among researchers. ♦

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The author has no declared financial interest in any company manufacturing the types of products mentioned in this article.

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C D A R E S O U R C E C E N T R E

For more information on vital pulp capping, contact the CDA Resource Centre at 1-800-267-6354, ext. 2223, or at info@cda-adc.ca.



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Antibiotics for the Millennium Bug in Your Practice

• Donna Fracchia, B.Pharm., MBA •

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What is the millennium bug? The Year 2000 bug — commonly known as Y2K bug — refers to a problem that will affect computer systems and software manufactured before 1995. The bug is linked to the way computers store and read dates. Computers recognize years solely by their last two digits — 99 rather than 1999, for example. The fear is that the year 2000 will be recognized as 1900, resulting in errors or major crashes. Perhaps you believe the Y2K problem is something only large corporations need to worry about. After all, it is estimated that companies and governments had spent billions of dollars by the end of 1998 trying to correct the problem. Or perhaps you feel you don't have to worry because your practice just doesn't use computers. As a small business owner and health professional, should you still be concerned?

The answer is an overwhelming "Yes!" whether you own a computer or not. If the sole result of the bug was the complete failure of a computer system, it would be annoying but not of serious consequence. Unfortunately, this bug will generate incorrect information that will not only be very difficult to detect but will have an important ripple effect as well. As a self-employed person, you may experience some chaotic times as a result of the millennium bug. E-mail and fax communications, and financial transactions and records such as RRSPs, mutual funds, brokerage accounts, bank accounts, insurance policies, mortgages and credit cards might be affected if the companies you deal with have not addressed the Y2K problem.

LIABILITIES

"In a society where people can spill hot coffee on themselves and successfully sue the establishment that sold the coffee, you have to expect that litigation raises the 'bug's' status to a plague."¹ As a self-employed person, the onus will be on you to prove your "case" even though it is a supplier or another party whose computer system has wreaked havoc with your business. Many banks will hold clients responsible for any

penalties and associated fees or overdrafts resulting from mistakes or delays in their system. They are not alone. The insurance industry will probably not cover failure of computing systems or computer-controlled machinery, or loss of income due to the Y2K bug.

As a business owner, you need to work on the assumption that *losses suffered as a direct result of the millennium bug (either in your or your suppliers' system) will not be covered by any insurance*. You must also be aware of the risk that you may be sued because your equipment has caused a third party to incur expenses unless you have exercised due diligence. Due diligence means that you have made reasonable efforts to expose and fix Y2K problems and have documented these efforts.

HOW WILL THE BUG AFFECT THE OFFICE?

Any PC-based computer in your practice manufactured before 1995, older software (DOS, XENIX and Windows 3.1), Internet navigator or fax machine is at risk of catching the bug. MacIntosh computers use a different operating system, making them Y2K resistant.

The prescription for curing the bug could be costly. You might need to replace the BIOS and system-clock chip sets. If your machine is still under warranty, your vendor may replace these components for you. Your other option is to purchase a new computer system. However, even with the purchase of new equipment, you will still need to test for the millennium bug to ensure compatibility and to avoid corrupting existing equipment. After all, we are talking about a "catchy" bug.

To date, there are no cures for systems or software with embedded chips (faxes, monitor systems, etc.). You may need to change the way you manually enter data years or the way your software stores data, or upgrade your software. Another option is to live with the glitches. In some programs, it may not be the year 2000 that will pose problems, but rather the year 2020 since some software has been programmed to accept two-digit year dates up to the year 2019. Problems can also

exist when you upgrade. For example, spreadsheet incompatibilities exist when moving from Excel 4 to Excel 5 or from Access 2 to Access 97.

Computer chips used in other electronic devices such as telephones, answering machines and sterilizers could malfunction. The elevators in your building might also be affected. This equipment may just need to be manually reset or it may fail completely.

Debit and credit card systems and electronic data interchange applications (such as **CDAnet**, third-party billings) could be affected.

PREVENTIVE MEDICINE

1. Find out from institutions and insurance companies handling your investments and banking accounts what steps they have taken to address the millennium bug. Enquire as to how they will handle penalties or fee charges such as overdrafts. Will you be accepting the liability or will they be paying the fee? Their answer may surprise you. Many larger organizations such as Vanguard, Fidelity, T. Rowe Price, Merrill Lynch and Charles Schwab have taken steps to avoid the bug. However, many small and medium-sized investment firms have not yet corrected the problem.
2. Patients' credit or debit cards may not be accepted in January 2000. Problems may lie with your processing machine, which may not recognize the patient's card as valid. Inform your employees of this potential problem and develop policies in advance to avoid needlessly embarrassing a patient.
3. Protect yourself by maintaining sufficient documentation to win your "case" in any millennium bug dispute. You will need:
 - a physical copy of all your data files by the middle of December 1999, stored in a safe place;
 - letters from your suppliers/manufacturers indicating they have addressed the Y2K problem;
 - a minimum of one year's account statements;
 - deposits, payments and receipts of any transactions you make from November onward;
 - returned cheques and cancelled cheques as proof of payments for 1998 and 1999;
 - a copy of your insurance policies detailing coverage, premiums paid and waivers, along with written confirmation that they are active;
 - written mortgage or loan statements on the institution's letterhead, detailing past payments of interest and principal to the current date, and a monthly payment schedule showing the balance and amortization in 1999;
 - a current copy of your credit record on file;
 - a listing of all companies or institutions that automatically withdraw funds from your bank or investment accounts;

CDAnet AND Y2K

As the new millennium approaches, dental offices across the country are reviewing their practice management systems and procedures to verify that all is ready for the Year 2000. At CDA, we are also hard at work testing our CDAnet communications software and standards on behalf of subscribing dentists. There are some important steps, however, for individual dentists to complete to ensure that their electronic and paper dental claims processing systems carry on uninterrupted into the new year. Don't be caught off guard. Here are a few helpful hints.

1. Contact your software provider and find out if your version of their software product is Y2K compliant. Just because the latest product promoted by your software supplier will pass the test, doesn't mean the version in your practice will. Ask your software supplier to be sure.
2. If you do not have a maintenance contract with your software provider, call them anyway or contact another expert to have your system checked. Software suppliers realize that not every one of their customers has purchased all the upgrades for their systems over the years. They may offer a "package deal" of upgrades that includes a Y2K check or provide a service specific to Year 2000 testing. Call your software supplier and ask for details.
3. Have you added software packages to your practice management system since it was installed? If so, inform the software company. Make a list of these additions to your system and have it handy when calling the software supplier.
4. If you decide to check for Year 2000 compliance by changing the date on your computer, remember to do a back-up of your files first as moving forward the date may activate a series of pre-programmed reports such as weekly or monthly reports that may override previously saved information. Also remember that the CDAnet system is "live" and that it is not permissible to send "test" claims. Check with your software supplier before testing your practice management computer system.
5. Not a CDAnet subscriber yet? If your computer office management system is not Y2K compliant and you must upgrade, consider upgrading to a CDAnet-certified practice management system that will allow your practice to submit dental claims electronically. Streamlining the claims submission process for your patients

Continued on page 344

- a detailed inventory of equipment that might be prone to a date-time problem.
4. Beginning in December 1999, it will be especially important to be prepared for delays in clearing cheques or for inaccuracies on bank, investment and financial statements.
 5. Enquire as to how your bank, suppliers and other organizations (including government programs) will handle penalties for overdrafts that result from the millennium bug. Request a status report on your insurer's readiness to cope with the bug.
 6. Develop a contingency plan that will allow you to run your office manually on short notice. Your plan should address billing, payroll, collections, inventory, security systems, and communication alternatives should the telephone fail. In addition, you should address how your practice will handle third-party claims. In December, print out patient scheduling, telephone numbers and addresses. Have the following supplies on hand: receipt pads, pens, income tax look-up tables, printing calculators, fee guides, a rubber stamp with your practice name, January and February patient name/address labels, and a printed list of contacts for every supplier.
 7. Test your computer's resistance to the millennium bug now. Be aware that some software programs can be labeled Y2K compliant because they handle the year 2000 even if they will catch the bug in the year 2019. Dates to test for include September 9, 1999 (09/09/99), 2000 and 2019. Don't forget, however, to make a back up copy of your files before doing your test. You can contact the software's supplier to see if your version is bug resistant. You can also get help from:
 - National Software Testing Labs: www.nstl.com/downloads/y2000.exe (provides software to test your computer)
 - Communitel: <http://www.communitel.org/whatsnew/year2000.htm>
 - IBM: www.can.ibm.com/year2000
 - Compaq: www.compaq.com
 - Dell: www.dell.com
 - Microsoft: www.microsoft.com/year2000
 - S.O.S 2000: www.strategis.ic.gc.ca/sos2000 (An excellent publication workbook is also available by calling 1-800-270-8220.)
 - Canadian Federation of Independent Business: <http://www.cfib.ca>
 - Industry Canada: <http://strategis.ic.gc.ca/year2000>
 - Information Technology Association of Canada: <http://www.itac.ca>
 - Year 2000 (Peter de Jager's Web site): <http://www.year2000.com>
 8. If you use the Internet and e-mail, ask your correspondents if they are Y2K ready. If not, you may have problems sharing information with them or you risk having your computer system infected.
 9. Find out what the office manager has done to ensure building equipment will be operational after December 31, 1999. Remember that insurance companies will not cover losses that occur because of Y2K problems, and that the onus will be on you to prove you have made an effort to mitigate your losses. This means keeping all your documentation. The following equipment will not likely cause problems for your practice: burglar, fire and smoke alarms, sprinkler systems, access and temperature control devices.
 10. Take advantage of government programs to lower your costs. Under the tax relief announced on June 11, 1998, accelerated capital allowance deductions of up to \$50,000 will be provided to small and medium-sized firms for computer hardware and software acquired between January 1, 1998, and June 30, 1999, to replace systems that are not Y2K compliant. This will allow smaller firms to deduct 100% of eligible expenditures in the year in which they occur. For further information, call Revenue Canada at 1-800-959-5525 or visit their Web site at www.rc.gc.ca/y2k. ♦

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The views expressed are those of the author and do not necessarily reflect the opinion or official policies of the Canadian Dental Association.

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C D A R E S O U R C E C E N T R E

Information Package, June 1999

This month's package contains a selection of reading materials on Y2K. It is available to CDA members for \$5.00 plus applicable tax.

A complete list of information packages is available upon request by calling 1-800-267-6354 or can be easily accessed on the CDA Web site at www.cda-adc.ca. Once inside our site, please log into the "CDA Members" area and click on "Resource Centre" to view the list of packages.

CDAnet and Y2K
Continued from page 342

is a great way to improve efficiency and boost patient satisfaction for any office.

6. Make sure that your receptionist has a supply of paper standard dental claim forms and that the correct year is recorded when the time comes. CDA member dentists can download the current version from CDA's Web site at www.cda-adc.ca or call the CDA order desk at 1-800-267-6354, ext. 2234, to place an order. It would be wise to have a supply on hand in case a particular carrier becomes non-compliant and therefore unable to process electronic dental claims when the clocks tick past midnight on December 31.
7. If you require more information about Year 2000 issues, contact the CDA Resource Centre to request a Y2K information package of articles on the possible consequences of the new millennium on the dental practice.

CDA has been in contact with the dental benefits carriers to determine their compliance for Y2K. To date, few have come forward to proclaim success, but all have stated that they intend to be ready at least by year-end. Your national association has requested that each insurance company and claims processor provide CDA with a statement of Year 2000 compliance. As each is received, it will be posted on CDA's Web site along with announcements from carriers regarding special claims processing procedures as a result of the Year 2000. Check the Web site each month to keep up to date.

CDA staff are in regular contact with companies that provide CDAnet-certified software. These software suppliers are contacting each of their clients to offer solutions to Y2K issues. You'll find a list of CDAnet-certified software companies and their telephone numbers on the CDA Web site. If you have not heard from your supplier yet, give them a call. They will be eager to help you find the best solution for your practice management and electronic claims processing needs.

Careful planning, knowledgeable advice and appropriate action will ensure that your practice management and dental claims processing systems will continue to provide the support your practice and patients require through the turn of the century. ♦

Ms. Carol Anne Deneka is manager of practice management support services, Canadian Dental Association.



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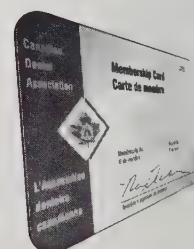
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Outcomes of Irradiated Polyglactin 910 Vicryl Rapide Fast-Absorbing Suture in Oral and Scalp Wounds

• Dimitri Aderriotis, DDS •

• George K.B. Sàndor, MD, DDS, FRCD(C), FRCS(C), FACS •

ABSTRACT

Background: This study evaluated the outcome of wounds closed with irradiated polyglactin 910 (IRPG) Vicryl Rapide (Ethicon, Somerville, N.J.).

Method: Seventy-one patients with 80 oral wounds and 42 patients with 42 scalp wounds closed with IRPG were evaluated on the day of surgery, then one, seven, 14, 28 and 90 days following surgery. The incidence of inflammation, suppuration and hypertrophic scarring was recorded, along with the timing of spontaneous suture disappearance. This suture material was compared with polytetrafluoroethylene (PTFE) sutures used in dental implant patients, traditional polyglycolic acid (PGLA) sutures used in osteotomy patients and skin staples used in patients with scalp wounds.

Results: In the group with intraoral wounds, there were two cases of suppuration with no inflammatory reactions or hypertrophic scarring when IRPG sutures were used, compared to three cases of suppuration with the traditional PGLA sutures. In the group with scalp wounds, there was no suppuration or hypertrophic scarring with IRPG sutures and one inflammatory reaction with skin staples. IRPG sutures never required removal, while all staples, PGLA and PTFE sutures eventually required separate removal.

Conclusion: Irradiated polyglactin 910 Vicryl Rapide is a useful suture material with both intra- and extraoral applications in the pediatric and adult populations.

MeSH Key Words: inflammation; sutures; wound healing.

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A variety of absorbable and non-absorbable materials, ranging from animal derivatives to synthetic polymers, are used for suturing. Silk suture, a non-absorbable material, is easy to tie and can be used effectively to oppose wound edges. Unfortunately, the braided nature of silk suture allows surface debris and bacterial accumulation, resulting in inflammation of the surrounding wound.¹ As with all non-absorbable materials, this type of suture must be manually removed. Nylon sutures, another type of non-absorbable material, are monofilament strands with no interstices. They are less prone to harbour bacteria or to cause wound reaction.¹ When nylon sutures are used intraorally, however, their cut edges are very sharp and tend to bother patients. That is not the case for the non-absorbable polytetrafluoroethylene (PTFE) sutures, which are well tolerated and accompanied by almost no inflammation, even in intraoral wounds.² PTFE sutures, however, are

expensive. Finally, metallic staples — another variety of non-absorbable suture — can be used on scalp wounds, but patients may find them painful.

Absorbable sutures made from animal derivatives such as gut and chromic gut generally require no suture removal. As these materials break down, however, their by-products may result in wound inflammation.¹ The polyglycolic, polylactic acid polymer-derived sutures (PGLA), such as Vicryl (Ethicon, Somerville, N.J.) and Dexon (Davis & Geck, Montreal, Que.), are absorbed via enzymatic degradation by hydrolysis, resulting in less inflammation.³⁻⁵ These sutures are well suited for deeper layer, non-surface closure. When used on the surface, however, they remain for at least four to six weeks, accumulating debris at the wound site and often necessitating manual removal.

Irradiated polyglactin 910 (IRPG) Vicryl Rapide (Ethicon, Somerville, N.J.) is a braided co-polymer of glycolic and lactic

Table 1 Comparison of IRPG, PTFE and PGLA sutures in intraoral wounds

	IRPG	PTFE	PGLA
Osteotomy	34	0	24
Implants	20	22	0
Trauma	26	0	0
Complications	2 (suppuration)	0	3 (suppuration)
Suture removal required	0	22	24

Table 2 Comparison of IRPG and staples in scalp wound closure

	Staples	IRPG
Number of patients	42	42
Inflammatory reaction	1	0
Suppuration	0	0
Hypertrophic scarring	0	0
Alopecia	0	0
Pain score	6.7	1.82
Patient preference	0	42

acid that is surface treated with polyglactin 370 and calcium stearate⁶ and has received gamma radiation. This radiation alters the suture material's molecular structure and enhances its absorption rate *in vivo*.⁶ Several reports on its use in pediatric,⁶⁻⁸ gynecological and general surgery⁴ have been published.

This paper reports on the use of IRPG Vicryl Rapide in oral and maxillofacial surgery, both in intraoral and extraoral wounds, and compares this suture material with other commonly used materials and skin closure techniques.

MATERIALS AND METHODS

Seventy-one patients with 80 intraoral wounds closed with IRPG sutures were evaluated. The average patient age was 28.4 years. The patients were evaluated on the day of surgery, then one, seven, 14, 28 and 90 days following surgery. The 71 patients were divided into the following three groups: group 1 consisted of 28 consecutive patients with 34 wounds from elective orthognathic procedures; group 2 consisted of 20 consecutive patients who had stage I dental implant placements; and group 3 consisted of 23 consecutive patients treated for 26 traumatic intraoral lacerations. All patients received perioperative antibiotics — either penicillin G at 2,000,000 units intravenously every six hours, or Cefazolin 1 g intravenously every eight hours for 48 hours. All patients with intraoral wounds were treated with chlorhexidine 0.12% mouth rinse every 12 hours for four weeks.

The results of group 1 were compared with the results of a group of 18 consecutive patients (average age 28.7 years) hav-

ing 24 wounds from elective orthognathic procedures closed with PGLA sutures. The results of group 2 were compared with the results of a group of 22 consecutive patients (average age 24.5 years) receiving dental implants and whose incisions were closed using PTFE Gore-Tex sutures (W.L. Gore & Associates, Flagstaff, Ariz.). In all patient groups, perioperative treatment regimens and follow-up schedules were the same as described above. In a separate portion of the study, 42 patients who had a bicoronal incision for treatment of either facial trauma (22 patients) or forehead lifts (20 patients) were evaluated on the day of surgery, then one, seven, 14, 28 and 90 days following surgery. The average patient age was 38.2 years and the average incision length was 12 cm. One half of the incision was closed using metal staples and the other half using IRPG as a continuing running surface suture. The sides of staple or suture closure were varied randomly. The entire length of each incision had deep, interrupted PGLA sutures. Vacuum suction drains were placed in all cases.

RESULTS

Of the 80 intraoral wounds closed with IRPG sutures, two developed suppuration of the incision line (incidence 2.5%). Both these wounds were successfully treated with a ten-day course of penicillin V at 600 mg taken orally every six hours. Both wounds were traumatic lacerations of the lower lip. There were no cases of hypertrophic scar formation and all sutures had fallen off spontaneously by day 14 (the patients were not aware of the exact disappearance date). In the PTFE patient group, there were no complications but in all cases the sutures had to be removed. All the patients whose wounds were closed with PGLA sutures for orthognathic procedures required some suture removal three to four weeks post-operatively.

There were three cases of suppuration in the PGLA group (incidence 12.5%). There were no cases of suppuration in the 34 wounds closed with IRPG (Table 1). Using the X² test, this difference was found to be statistically significant ($p < 0.05$). In the bicoronal flap study, the following parameters were evaluated: inflammatory reaction, suppuration of wounds, hypertrophic scar formation and patient discomfort, which was evaluated using a visual analogue pain scale and overall patient preference. All patients expressed a preference for the IRPG material, complaining of more pain on the staple side, especially at night when lying in bed. Average pain scores were 6.7 for the staple side versus 1.8 for the IRPG side. Based on the paired *t*-test, the difference is statistically significant ($p < 0.05$) (Table 2).

All staples had to be removed at day 14. All IRPG sutures had fallen out by day 12 in five patients, by day 13 in three patients, and were easily rubbed off on day 14 in 34 patients. All patients had been gently shampooing their hair as directed. There was one case of excessive inflammatory reaction noted on a wound closed with staples. There were no cases of suppuration, alopecia (hair loss) or hypertrophic scar formation in either patient group.

DISCUSSION

IRPG constitutes one more attempt to find an ideal suture material that is strong, handles easily, forms secure knots and causes minimal tissue reaction. Since its introduction in 1976,

this suture has been used with satisfactory results in a variety of applications, including hand, plastic, gynecological, general and oral and maxillofacial surgery.

IRPG has gained particular favour among pediatric surgeons because of its fast absorption rate, which makes suture removal either unnecessary or very simple (sutures can be wiped off). Martelli and others⁸ showed the significant savings in time and money that can be realized by avoiding general anesthesia for very young patients needing suture removal. An added advantage of the IRPG sutures is the very mild inflammatory reaction of the surrounding tissues.^{6,7,9} Microscopically, the suture material is absorbed mainly through phagocytosis and disappears completely by day 35.⁶ The degree of inflammation is less than that observed with plain or chromic catgut sutures. IRPG is not recommended for facial skin closure; it can result in unfavourable scarring by remaining on the surface tissues longer than five days.⁸

The early disappearance of IRPG sutures, compared to PGLA sutures, is another advantage since many patients are irritated by the prolonged presence of intraoral sutures. The PGLA sutures can act as a potential breeding ground for bacteria, especially if sutures are braided, increasing the risk of infection. Finally, removing intraoral PGLA sutures, especially in young patients, can be a difficult and frustrating exercise. With IRPG, suture removal is unnecessary, an added advantage when one considers that many trauma patients are lost to follow-up.

After using the suture material extensively to close a variety of intraoral wounds (incisions for orthognathic surgery, implant placement and lacerations), the authors found this suture easy to handle, providing good knot security and causing minimal inflammatory reaction of the surrounding tissues. As with any new material, there is a learning curve involved with regard to its handling. IRPG is far more brittle than PGLA and will therefore snap if tugged on suddenly, frustrating the novice user. Its regular use, however, requires only a slight adjustment in suturing techniques.

In treating scalp wounds, the authors agree with Tandon and others⁹ that Vicryl Rapide is more visible among the hairs because of its white colour and that it has favourable handling characteristics. It is also preferred by patients because it causes negligible pain and minimal inflammatory reaction compared to staples.

From an economic point of view, Vicryl Rapide is at most 10% more expensive than similarly packaged cut or chromic sutures. PTFE sutures, on the other hand, are at least four times the cost of Vicryl Rapide.

CONCLUSION

IRPG is a versatile and useful suture for oral and maxillofacial surgery. It can be used in a variety of applications, both intra- and extraorally, for pediatric as well as adult patients. The use of IRPG suture results in little wound inflammation. IRPG is absorbed over 12 to 14 days and does not require removal. It is also much more cost-effective than PTFE sutures and only slightly more expensive than catgut, chromic or PGLA sutures. Future evaluations, using clinical and economic parameters, will be necessary to compare IRPG with

newer, absorbable, monofilament polymers such as the polydioxanones and caprolactones. ♦

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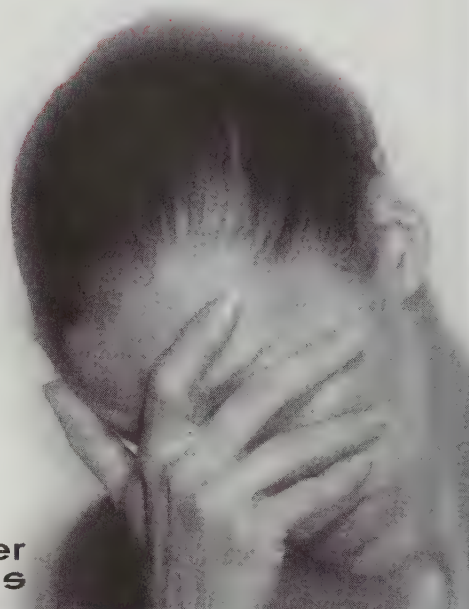
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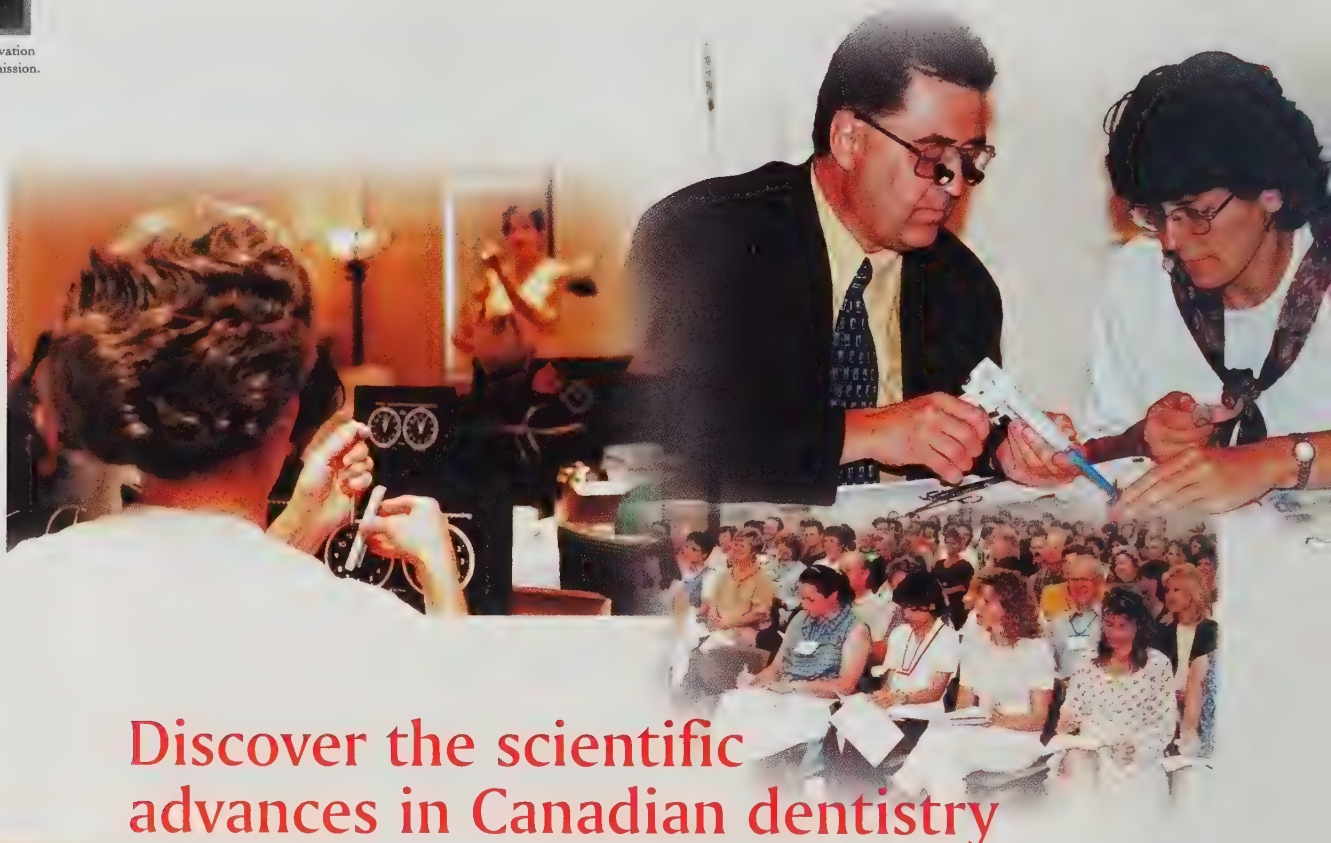
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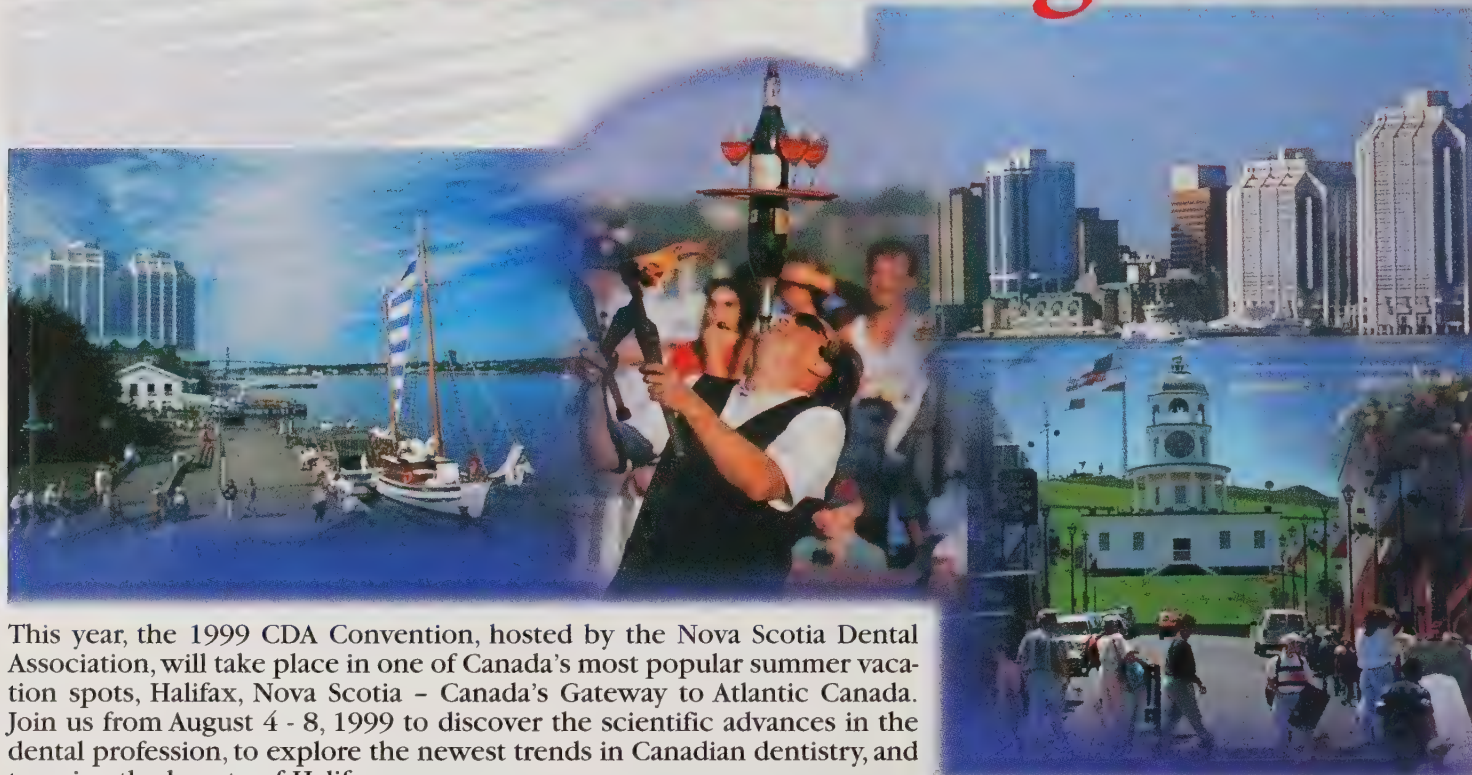
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MANITOBA - Winnipeg: Excellent opportunity to purchase a dental practice as either a part-time satellite or full time. Located on West Broadway in Winnipeg in a modern and fully equipped set up with three operatories. This would be very appropriate for a recent graduate. Very reasonable terms. For further information please contact: Dr. Lou Cogan, 640 Broadway, Winnipeg, MB R3C 0X3, tel. (204) 772-3523. D480

NEW BRUNSWICK - St. George: Three-operators, computerized, well-established dental practice for sale in beautiful St. George, New Brunswick, only 40 minutes west of Saint John. The office is located on Main Street in a new, self-con-

tained building overlooking the river. The practice is grossing \$300,000 per year, running at only 50% overhead and has an excellent lease in place. An associateship/buy-in situation is negotiable. Please contact Dr. Tim Chaisson for further information, tel. (506) 633-8485 or fax (506) 633-8584. D449

NOVA SCOTIA: For sale, solo general dental practice with emphasis on prosthodontics and restorative dentistry, potential for growth in preventive services. Practice is well established (1992) with approximately 1,000 active patients, is located close to a nursing home and offers direct access to all nearby rural areas. This office is 1,150 sq. ft. with two fully equipped operatories, a well-designed floor plan, plus an in-house lab and options for remodelling. Large number of prepaid insurance patients. Owner is planning to assume full-time faculty position at Dalhousie and is willing to participate in a reasonable transition/take-over arrangement with a potential purchaser. Serious enquiries please contact: Dr. George Zwicker, tel. (902) 624-9000 or Bill Tingley, tel. (800) 565-1525 in NS, NB or PEI. Local enquiries call 835-1103. D488

NOVA SCOTIA: Well-established dental practice for sale in beautiful Nova Scotia. It is a turnkey operation, fully staffed, complete with two fully equipped operatories, lab/sterilization set up, and full inventory of supplies and instruments. The building in which the practice is located is currently owned by the vendor and is included in the purchase price. Patient treatment acceptance is very good and the practice has maintained its high level of quality dentistry for over 20 years. The office itself is situated in a picturesque town in rural Nova Scotia only 60 minutes from Halifax. The practice is a great opportunity for someone looking for an associateship/buy-in situation. Please contact Bill Tingley for further information at (902) 835-1103 or (800) 565-1525. D456

ONTARIO - London: Established, busy general practice; 1,500 sq. ft., three operatories, pan, equipped for sedations. Building also available for purchase or lease. Illness prompts transition. Call (519) 652-2007, fax (519) 652-9184. D486

ONTARIO - Toronto: Toronto surgery clinic available, 1,200 sq. ft., accredited for anesthesia. Perfect for dentistry. Call (905) 279-4245. D491

ONTARIO - Ottawa: For sale. Family practice. Attractive plaza location, two + one operatories, new equipment, computerized. Great potential for growth. Professionally appraised. Owner relocating. Modestly priced (assets). Please call (613) 719-5668. D468

ONTARIO - North Toronto: House and dental practice for sale. Well-established general family preventive practice, with strong recall base, in a four-operatory clinic attached to a luxury residence. Bayview/401/Sheppard area. Ideal for husband/wife professional team with children. Retiring but able to facilitate the transition. Reply to: CDA Classified Box # 2773. D474

ONTARIO - Northwestern: Established practice for sale in northwestern Ontario. Three operatories (one hygiene), full-time hygienist, computerized, panoramic x-ray, intraoral camera. Gross over \$400,000; 2,600 active patients. Professional appraisal available. Excellent recreational facilities. Easy drive to major city. Vendor willing to assist in transition. Reply to: CDA Classified Box # 2764. D389

QUEBEC - Montreal: Ideal opportunity in Montreal. Ready to move in. Dentist's office to rent, Dollard des Ormeaux, Blvd. St. Jean; 1,000 sq. ft. Well divided, three operating rooms, one X-ray room, private office and laboratory. Ample parking, great location. Low rent, established for more than 20 years. Ideal opportunity for young dentist. Tel. (514) 626-1200. D502

SASKATCHEWAN - Regina: Prime dental facility, 1507 sq. ft. plummed and electrified. Available June 1, 1999. Lease negotiable. Contact: Dr. Berdan and Dr. Radomsky, tel. (306) 586-6077. D452

SASKATCHEWAN - Gravelbourg: Rural general practice in medical-dental clinic. Leaseholds and equipment 1991. Cost-sharing waiting room and reception with two family physicians. Excellent location to raise a family. Two operatories installed panorex and automatic develop-

er. Dentrix computer system. Over 1,700 active patients; untapped potential. Owner relocating down east, closer to his family. Contact: Dr. LaBerge, tel. (306) 648-3649 (after 6 pm CST). D432

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ALBERTA - South Edmonton: Doctor associate. Full-time position available. South Edmonton. Monday to Friday, days/evenings, and alternate Saturdays, 9 - 5. Please phone (780) 436-7048 or (780) 450-1639. Calls are strictly confidential. D497

ALBERTA - Red Deer: Full-time associate required immediately for busy, growing, modern family practice. Previous associate's spouse had job transfer, leaving a full patient load to the successor. Candidates must be caring, conscientious and comfortable with a young family-based clientele. Practice is open 1 to 2 evenings but not weekends. Position may lead to future buy-in partnership. Please contact: Debbie, tel. (403) 342-5800 (from Monday to Thursday), or fax to (403) 340-3757. D493

ALBERTA - Calgary: Established, seven-chair, modern practice in Kensington (central) requires experienced dentist to associate full time, some evenings and Saturdays. Practice average gross \$1,200,000, potential for buy-in for right individual. Fax resumes to: (403) 283-6553 or e-mail kenhouse@cadvision.com D490

ALBERTA - Camrose: Forty-five minutes from Edmonton. Full-time associate required for busy, growing, modern family practice. A great community to live in and raise a family. Position leading to future buy in. Call (780) 679-2224 or fax (780) 672-4700. D483

ALBERTA - Calgary: Busy northeast dental practice seeking associate. Some evenings and weekends, 30-40 hours per week. Contact: Mike, tel. (403) 547-4019. D472

ALBERTA - Calgary: Dynamic oral and maxillofacial surgery practice looking for an associate/partner to join our full-scope team. Come to the fastest growing city in Canada where culture, breathtaking Rocky Mountain scenery and the best

business climate in Canada make Calgary the place to call home. Send resume to: CDA Classified Box # 2775. D479

ALBERTA - Calgary: Associate dentist required starting July 1999. Busy general dental practice in northeastern Calgary, Alberta. Beautifully renovated office with eight operatories. Pleasant environment, motivated staff. Please call Lisa at (403) 276-3660. D446

ALBERTA - Grande Prairie: Full-time associate required immediately for busy, growing, modern family practice. Open some evenings and weekends; averaging 80+ new patients per month. Position leading to future buy-in. Please call (403) 532-6861 or fax (403) 532-4656. D348

BRITISH COLUMBIA - Vancouver Island: Associate position. Dentist with strong interest in high-quality, comprehensive restorative and prosthetic treatment seeks new or recent graduate to associate with goal of partnership. This is a unique opportunity to learn while building a family practice. Outstanding new office with

intraoral video, imaging software, soft tissue laser, air abrasion and extensive laboratory facilities. Ladysmith is on the east coast of Vancouver Island, adjacent to the Gulf Islands and approximately 1 hour north of Victoria. Prospective partner should plan to enjoy semi-rural waterfront lifestyle in an area with an excellent industrial/bedroom/retirement-oriented demographic. Contact: Dr. Ken Phelps, PO Box 608, Ladysmith, BC V0R 2E0; tel. (250) 245-7151 (bus.), (250) 753-1970 (res.), fax (250) 245-7175, e-mail phelps@nanaimo.ark.com D506

BRITISH COLUMBIA - Okanagan Valley: Vernon, looking for semi-retired dentist to work 2 - 3 days per week (Friday, Saturday) and to cover holiday times on a permanent basis in a very relaxed, easy-going atmosphere (summer or fall 1999). Vernon offers a wonderful lifestyle. Call (250) 558-5565 (evgs.). D505

BRITISH COLUMBIA - Williams Lake: Well-organized, computerized office with four full-time hygienists, office manager and visiting oral surgeon, anesthesiol-

ogist and periodontist is looking for an enthusiastic associate to start April 2000 (approximately). Present associate of 5 years is returning to post-graduate studies. This position has a proven earnings track record going back 20 years. This is a large family practice which offers a place to get both good experience and a good income. Please call collect, Dr. Alistair Menzies, (250) 398-7161 (bus.) or (250) 392-2615 (res.) or fax (250) 398-8633 or email Menzies@midbc.com D501

BRITISH COLUMBIA - Burnaby: Full-time associate required for well-established, busy, general practice located in a prime location beside a major mall. Position available to replace present associate. Opportunity exists for future buy-out for right candidate. Reply to: CDA Classified Box # 2777. D498

BRITISH COLUMBIA - Okanagan Valley: Enjoy skiing, golfing, fishing, sailing? This newly renovated general dentistry practice, with friendly support staff, is located in the beautiful Okanagan Valley. We are seeking a full-time associate with

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Tawam Hospital, PO Box 15258, Al Ain, Abu Dhabi, UAE
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Email: wdimmitt@tawam-hosp.gov.ae D495

the intent to purchase. Present associate is returning to school to pursue specialty training and is leaving a full patient load to his successor. Candidates must be caring, conscientious and practise with a high degree of integrity. Preferences will be given to candidates with experience. Interested applicants should submit resumes and references to: CDA Classified Box #2768. D437

BRITISH COLUMBIA - Kelowna: Associate required to start with part-time hours Thursday, Friday, Saturday. Buy-in an option. Five operatories, pan-ceph, Reveal camera system, Dentrax computer system in operatory. Lots of high-tech goodies. Please call after 6 pm B.C. time, (250) 764-7541 or fax to (250) 764-7521 or e-mail michelle_boyd@bc.sympatico.ca D410

MANITOBA - Central: Associate required for busy general practice in central Manitoba. Up to \$10,000/month. Travel required on a monthly basis to satellite clinics. We believe in quality-but-also-practical dentistry. Call (204) 623-2543. D440

MANITOBA - Swan River: Associate wanted with view to purchase within 1 - 2 years. Well-established, busy general practice in west-central farming community. Five operatories, 4-day work week, long-standing friendly staff. Approximately 30 new patients monthly. Call (204) 734-4756 or (204) 734-2371, after 6 p.m. D288

NEW BRUNSWICK - Fredericton: Associate position in a growing family practice available immediately. Office located in city's busiest mall. Looking to expand office hours. Future partnership possible. Reply to: Dr. Perley Weaver, 212 - 1381 Regent St., Fredericton, NB E3C 1A2; tel. (506) 457-1234, fax (506) 450-1210. D484

NORTHWEST TERRITORIES - Yellowknife: Canadian licensed dentists. Full-time associate position available in Yellowknife. Modern, computerized, centrally located clinic. Travel to outlying communities necessary. Exciting opportunity. Forward resume to: PO Box 2615, Yellowknife, NT X1A 2P9 or fax (867) 873-5032. D267

NORTHWEST TERRITORIES - Yellowknife: Canadian certified dental associate required for a modern family dental practice with pleasant support staff. The clinic is located in the city of Yellowknife. Seeking a caring motivated individual interested in a long-term position. Please reply to: CDA Classified Box # 2705. D012

ONTARIO - Eastern: Exceptional opportunity for the right person. Associate required for thriving, modern practice in historic eastern Ontario city. Established team is ready to expand and welcome like-minded individual who will share their commitment to compassionate, optimal dental care. Please call (613) 342-2029, or write to: Dr. Peter Bevan-Baker, 95 King St. E, Brockville, ON K6V 1B4. D503

ONTARIO - North Toronto: Periodontist wanted. We are a periodontal specialty practice in the North Toronto area. We are looking for a periodontist to associate for 2-3 days per week to start. Opportunity for future partnership/purchase. Please reply to: CDA Classified Box # 2776. D492

ONTARIO - London: University of Western Ontario. Full-time tenure-track or contract position available in operative dentistry, Sept. 1, 1999, or as soon thereafter as possible. Rank and salary commensurate with qualifications and experience. Qualifications include DDS or equivalent degree. Preference given to those with advanced training. Duties include didactic, preclinical and clinical teaching and possibly some administration. For tenure-track appointment, research activity is expected. Consulting privilege of 1 day/week available and intramural practice opportunity exists. Applications, which should include curriculum vitae and names of three referees, should be sent to: Dr. Stanley L. Kogon, Acting Director, School of Dentistry, The University of Western Ontario, London, ON N6A 5C1. Applications accepted until position filled. Positions are subject to budget approval. In accordance with Canadian immigration requirements, this advertisement directed to Canadian citizens and permanent residents of Canada. The University of Western Ontario is committed to employment equity, wel-

comes diversity in the workplace, and encourages applications from all qualified individuals including women, members of visible minorities, aboriginal persons and persons with disabilities D485

ONTARIO - CFB Petawawa: General dentist position for military clinic, June 1 - Sept. 30, 1999. Further employment possibility. Five days/week, salary negotiable. Large 16-chair clinic, 2 hours north-west of Ottawa. Reply: Maj. Gary S. Ford, tel. (613) 687-5511, ext. 5631, e-mail majfordg@renc.igs.net D487

ONTARIO - Toronto Area: Established oral and maxillofacial surgery practice seeking board-eligible/board-certified oral surgeon for associateship leading to partnership. All new modern office. Please reply to: CDA Classified Box # 2774. D477

ONTARIO - Niagara Peninsula: St. Catharines. Oral and maxillofacial surgical partnership opportunity. Present, well-established (25 years), experienced surgeon offers a partnership with intention of potential semi-retirement. Attractive office 1/2 block from major hospital in well-established medical-dental building, which has just been recently renovated. Six surgical and consultation operatories - general anesthetic facilities with full recovery area - all modern and spacious. Excellent fully trained staff. Golf, hockey, tennis, rowing, sailing, fishing, theatre, U.S.A. border, Brock University, Niagara College, Ridley College, etc. Tel. (905) 688-3444, fax (905) 688-1806, e-mail Kosty@Vaxxine.com D460

ONTARIO - Ottawa: Endodontist required immediately. Earn \$500,000 net first year. Reply to: CDA Classified Box # 2769. D450

ONTARIO - Peterborough: We are looking for a self-motivated, people-oriented individual for a part-time associateship in our practice, leading quickly to a full-time associateship. This position involves a commitment to work evenings and Saturdays in a progressive family dental practice with a pleasant environment and fun staff. Tel. (705) 742-5666. D451

ONTARIO - Northern: Associate required for a group practice in northern Ontario. New graduates welcome. Please call Greg at (705) 945-8272. D458

ONTARIO - Sudbury: Associate wanted. Well-established, busy, group family practice. Computerized. Fax resume to (705) 673-8103, attn: "Mark"; tel. (705) 673-5126. D459

ONTARIO - Midland: Associate, full time. Progressive preventive practice seeks associate for 4 - 5 days a week. Please apply to: Dr. John Gibson and Doug McClure, 522 Elizabeth St., Midland, ON L4R 2A1; tel. (705) 526-0111. D430

POSITIONS SOUGHT

CANADA: Locum dentist. Caring dentist, 8 years experience. Good rapport with patients and staff. Proficient in all areas of dentistry. Available beginning August. Please contact: Dr. Robert Penning, tel. (416) 322-9589. D504

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INTERPROVINCIAL MOBILITY OF DENTISTS

Mr. Brian Henderson's reply to Dr. Mark Lazare's letter concerning the interprovincial mobility of dentists (*J Can Dent Assoc* 1999, 65:134) described CDA's efforts to facilitate the mobility of dentists but did little to rationalize the complexity and uncertainty of the existing policy.

In the 1960s, the National Dental Examining Board (NDEB) exam was a voluntary option pursued by dentists considering practising in a province other than the one in which they had graduated. However, even though the NDEB certificate was viewed as a national license, individual provinces reserved the right to impose further qualifying criteria. Little seems to have changed since the '60s other than the fact that the NDEB exam will now be mandatory. It appears that the provincial regulatory bodies still represent a stumbling block to true mobility.

As all dental schools must be duly accredited by the relevant CDA body to continue functioning, it is not unreasonable to enquire as to the need for further examination of graduates once they possess their university diploma. If standards among the country's dental schools vary to a degree that makes the NDEB exam necessary, then perhaps we should be considering the establishment of a viable national dental curriculum rather than a remedial measure after graduation.

If universal imposition of the NDEB exam is to have any lasting credibility, then the measure needs to be adequately justified to the CDA membership. Persistent recalcitrance on the part of provincial regulatory authorities to stop

imposing additional requirements for licensure is a somewhat feeble reason in itself. If, on the other hand, this imposition has occurred to placate unqualified foreign dentists and Canadians who are graduates of American universities, then it is blatantly unfair to encumber all new graduates with this obligation.

Clearly, if the NDEB requirement is to persist as a mandatory measure, then some allowance will have to be made for mature dentists, who are surely entitled to workplace mobility without having to return to the classroom to obtain it. The words "grandfather" and "sunset" suddenly spring to mind.

Donald F. Mulcahy, DDS
Edmonton, Alta.

AMALGAMATION: CHOICE OR NECESSITY?

Dr. Donald Mulcahy's article on amalgamation, which appeared in the debate section of the *CDA Journal* (*J Can Dent Assoc* 1999; 65:229-30), cannot be left without comment. I have no interest in entering a debate on the topic based on the fragmented and disjointed points brought forward by the author. However, his comments on the motivation behind the merger of the faculties of medicine and dentistry at the University of Western Ontario (UWO) are totally without support. In fact, the entire reference to the UWO should be considered nothing but personal musing containing not one iota of factual evidence.

As to being in the "giant shadow cast by the country's largest and most prestigious school," I leave it to the readers, many of whom are alumni of the nine other schools in Canada, to comment. As for the UWO, we are in no one's shadow. Within a radius of 300 miles, are at least six dental schools in two countries. I am sure that we share in both the shadows and reflections cast by all.

Stanley L. Kogon, DDS, M.Sc.
Acting Director, School of Dentistry
The University of Western Ontario

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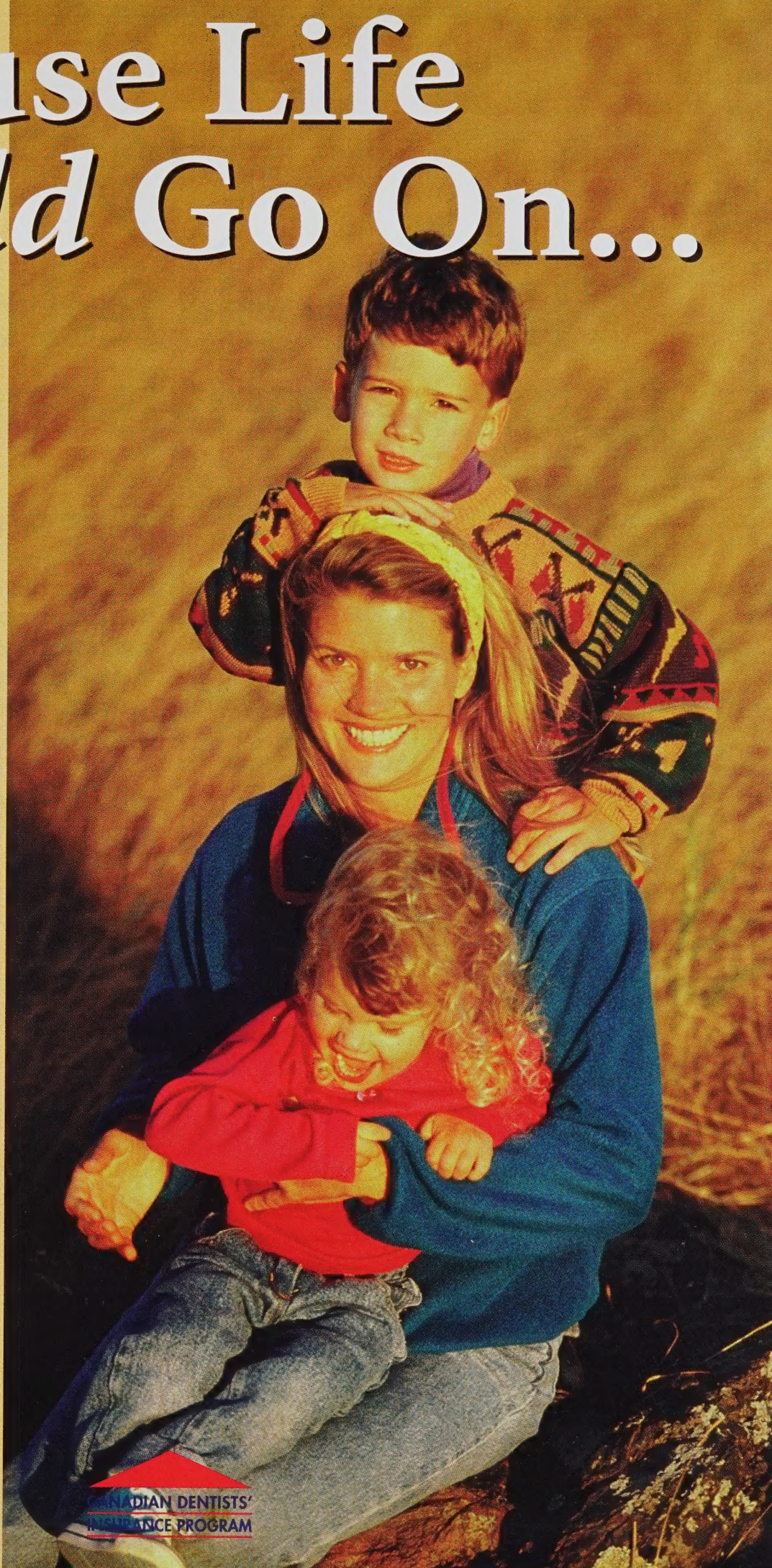
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